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MONOGRAPHIA

ANOPLURORUM BRITANNIÆ.

"By whose power were the meanest creatures formed? By whose will do they live? Know that He who in the beginning created the heaven and the earth, said, 'Let the earth bring forth the living creature after his kind, cattle, and *creeping thing*, and beast of the earth after his kind, and it was so.' Is it then to be considered as a degrading employment for men to examine those creatures which were formed by God?"—*Fleming.*

"It is evident that the general tendency of the study is to lead us from the admiration of the works, to the contemplation of their Author; to teach us to look through Nature up to Nature's God. It is a study which terminates in the conviction, the knowledge and the adoration of that Being, to whom we owe every thing that we enjoy."—*Bingley.*

MONOGRAPHIA

ANOPLURORUM BRITANNIÆ;

OR,

AN ESSAY ON THE BRITISH SPECIES

OF PARASITIC INSECTS

BELONGING TO THE ORDER ANOPLURA OF LEACH,

WITH THE MODERN DIVISIONS OF THE GENERA ACCORDING TO THE VIEWS OF

LEACH, NITZSCH, AND BURMEISTER,

WITH HIGHLY MAGNIFIED FIGURES OF EACH SPECIES.

By HENRY DENNY,

AUTHOR OF "MONOGRAPHIA PSELAPHIDARUM ET SCYDMÆNIDARUM BRITANNIÆ," HONORARY MEMBER OF THE YORKSHIRE AND LEEDS PHILOSOPHICAL SOCIETIES, AND OF THE NORFOLK AND NORWICH MUSEUM.

"Do not depreciate any pursuit which leads men to contemplate the works of their Creator."—*Southey.*

"Nothing can be so minute as to be unworthy of the investigation of man, which was not unworthy of being created by God."—*Boyle.*

"Think not that any thing he hath vouchsafed to create, is unworthy thy cognizance, to be slighted by thee. It is pride and arrogance, or ignorance and folly in thee so to think.

"There is greater depth of art and skill in the structure of the meanest insect, than thou art able for to fathom or comprehend.

"The wisdom, art, and power of Almighty God shine forth as visibly in the structure of the body of the minutest insect, as in that of a horse or elephant: therefore God is said to be maximus in minimus."—*Ray.*

"He who does not make himself acquainted with God from the consideration of nature, will scarcely acquire knowledge of him from any other source; for if we have no faith in the things which are seen, how should we believe those things which are not seen?"—
LINNÆUS's *Reflections on the Study of Nature.*

LONDON:

HENRY G. BOHN, YORK STREET, COVENT GARDEN.

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TO

SIR WILLIAM JARDINE, BARONET, F.R.S.E., F.L.S., F.Z.S,

Member of the Wernerian Natural History Society of Edinburgh; Honorary Member of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne; the South African Institution, Cape of Good Hope, &c. &c.

OF APPLEGARTH, DUMFRIESSHIRE;

ROBERT KAYE GREVILLE, ESQ., LL.D., F.R.S., F.L.S., F.A.S.E.,

Member of the Wernerian Natural History Society of Edinburgh, of the Imperial Academy Naturæ Curiosorum of Moscow, of the Natural History Society of Leipsic, of the Physiographical Society of Lund; Corresponding Member of the Natural History Society of Paris, of the Academy of Natural Sciences of Philadelphia, of the Medico-Botanical Society of London, of the Linnean Society of Normandy; Honorary Member of the Royal Irish Academy, of the Lyceum of Natural History of New York, of the Natural History Society of Montreal, of the Liverpool Royal Institution, of the Cambridge and York Philosophical Societies, &c.

OF EDINBURGH;

AND

PRIDEAUX JOHN SELBY, ESQ., M.A., F.R.S.E., F.L.S.,

Member of the Wernerian Natural History Society of Edinburgh; Vice-President of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne; Honorary Member of the Royal Zoological Society of Ireland, the Yorkshire Philosophical Society, the Bristol Institution, &c.

OF TWIZELL HOUSE, NORTHUMBERLAND.

To whom, in conjunction with the individuals whose names occur in a succeeding page, can I dedicate this work with so much propriety, as to those, whose researches as Naturalists, and philanthropy as Men, equally command admiration and esteem; since, but for their unwearied exertions in obtaining patronage for my humble labours, these pages might never have met the Public eye?

To them, therefore, in testimony of the feelings with which he shall ever remember their prompt assistance, this Monograph

Is most respectfully inscribed by

THE AUTHOR.

TO THE

REV. LEONARD JENYNS, M.A., F.L.S., F.Z.S., F.G.S.,

Member of the Entomological Society of London, and of the Cambridge Philosophical Society; Honorary Member of the Royal Zoological Society of Ireland, and of the Natural History Society of Boston, United States, &c.

OF SWAFFHAM BULBECK, CAMBRIDGESHIRE;

WILLIAM THOMPSON, ESQ.,

Vice-President of the Natural History Society of Belfast, etc., etc.;

AND

HERMANN BURMEISTER, M.D., PH.D.,

Professor of Zoology in the University of Halle, and Director of the Museum of Zoology; Member of the Imperial Academy of Naturalists, of the Physical and Medical Society of Erlangen, of the Natural History Society of Altenburg; Honorary Member of the Entomological Society of London, and of the Natural History Society of Berlin, &c.

THREE ARDENT ADMIRERS OF NATURE,

Whose unceasing labours to elucidate the boundless variety of objects which own the Creator's care and proclaim his power, is only equal to their disinterested exertions and zealous endeavours to forward *illustrations* for the present Monograph, and without whose assistance it must have been materially abridged,

This volume is inscribed,

With gratitude and esteem, by

THE AUTHOR.

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ERRATA.

Page 41, line 2, *for* "Phiilopteridæ" *read* "Philopteridæ."
51, 22, *for* "clavaformis" *read* "claviformis."
55, 14, *for* "redibundus" *read* "ridibundus."
70, last line, *for* "angle rotundate" *read* "angles rotundate."
117, 19, *insert* a comma after "lateral margin," *dele* the comma after "underside."
128, 19, *after* "each segment" *read* "in the female; male with deep chestnut fasciæ."
160, 5, from the bottom, *for* "Plate XIII. fig. 8" *read* "fig. 3."
185, 30, *for* "Plate XXII" *read* "XXIII."

PREFACE.

In treating upon any subject at the present day, it is generally the practice or wish of the author to give importance to his labours or the object of his investigations, by impressing upon it the stamp of antiquity, from some Archæological notice to which he can lay claim. If there is any intrinsic value to be attached to ancient Bibliographical notices, the author of the present Monograph is fortunate in being able to call some such to his aid.

As regards the period when Parasitic animals were first created, I shall not offer an opinion, the subject being one of those speculative theories which it is impossible to reduce to a demonstration. Though my venerable and esteemed friend, the father of British Entomologists, the Rev. Dr. Kirby, has conjectured, that Parasitic Insects infesting the human race, were not called into existence until after the fall of Adam. "Can we," (he says), "believe that man in his pristine state of glory, and beauty, and dignity, could be the receptacle and prey of these unclean and disgusting creatures?"*

If, however, we pass on to the period of the exode from Egypt, we then find not only a decided reference to the objects of our treatise, but an awful demonstration of the fact, that Jehovah can indeed make the weak things of this world to confound the mighty, and that however insignificant and puny these animals may appear individually, yet when marshalled in countless myriads at the fiat of the Almighty, as the instruments of His displeasure, they then produce results the most dreadful. "And the Lord said unto Moses, say unto Aaron, Stretch out thy rod and smite

* Bridgewater Treatise, vol. I. p. 13.

the dust of the land, that it may become *lice* throughout all the land of Egypt.—And they did so, for Aaron stretched out his hand with his rod, and smote the dust of the earth, and it became lice in man and in beast, all the dust of the land became lice throughout all the land of Egypt."* Notwithstanding the apparent simplicity of this passage, it has been the subject of much controversy between several learned commentators,—some supposing Flies or Gnats, and others Ticks were intended by the sacred historian. From being totally ignorant of the Hebrew language I cannot of course presume to decide the question as to its philological accuracy. But taking it in another point of view, it appears to me at least to be very evident, that the animals referred to by Moses, were identical with what we now know to infest man and beast, and designate Lice, for were Flies or Gnats intended to be understood by the term employed, the habits of the Insects would not be in accordance with what we know to be usual. And I do not think we are justified in supposing that the natural habits of the animals employed as plagues were at all altered. The only circumstance which rendered them so great a calamity was the surprising increase in their numbers, and the miraculous manner in which that increase was effected. The Locusts differed in no wise, in their general economy, from locusts of the present day. The Frogs again only became annoying from their extraordinary multitudes, which caused them to spread over the land, and enter the houses of the Egyptians. The Flies, in like manner, from their countless swarms, filled their habitations, and tormented both man and beast. But supposing we grant, for the sake of argument, that they were of the genera *Chrysops Hæmatopota, Stomoxys, Œstrus*, and *Culex*, or of the family *Hippoboscidæ*. This would have rendered nugatory the plague which immediately succeeded it, and is expressly stated to

* Exodus viii. 15, 17.

be a "swarm of Flies." Again, as Bryant has attempted to shew, the plague of Lice was at once so humiliating, and in opposition to the enjoined habits of the people, that the priests and magicians perceived immediately from what hand it came. He remarks, "The Egyptians affected great external purity, and were very nice both in their persons and clothing, bathing and making ablutions continually, uncommon care was taken not to harbour any vermin. They were particularly solicitous on this head thinking it would be a great profanation of the temple which they entered, if any animalculæ of this sort were concealed in their garments. The priests, says Herodotus, are shaved, both as to their heads and bodies, every third day, to prevent any *louse* or other detestable creature being found upon them when they are performing their duty to the Gods.* The same is mentioned by Plutarch, who adds, that all woollen was considered as foul, and from a perishable animal, but flax is the product of the immortal earth, it affords a delicate and pure covering, and is not at all liable to produce lice.† We may hence see what an abhorrence the Egyptians showed towards this sort of vermin, and what care was taken by the priests to guard against them. The judgments, therefore, inflicted by the hands of Moses, were adapted to their prejudices. It was consequently not only most noisome to the people in general, but was no small odium to the most sacred order in Egypt, that they were overrun with these filthy and detestable vermin."‡ So far then, as the value of antiquity is concerned, I am safe, and the Parasitism of the Pediculi on our race, is recorded at a very early period of the history of the World. I must now, therefore, turn to the more immediate object of this treatise.

* Herod. lib. II. c. 37. p. 121. † Plut. (de Isis et Osir. vol. II. p. 352. D.)
‡ Bryant on the Plagues of Egypt, p 44-48.

During the year 1827, three or four specimens of Pavo cristatus having passed through my hands, upon each of which I observed for the first time, several examples of the large and well marked parasite of this bird, the *Goniodes falcicornis*, I was induced to examine whatever other species of birds, &c. might come in my way, to ascertain whether great diversity in size or appearance existed between the parasites of different species or genera. This I soon found to be so considerable, that I resolved upon forming a collection, and ascertaining what was written upon the parasitic tribes.

In the prosecution of the former part of the task I found little difficulty, but with respect to the latter, I could make no progress, as no distinct treatises upon the families were in existence, and all that was available were either mere enumerations, without reference or figures, or occasional descriptions of species which were scattered through various works, many of which were not easy to procure, especially in provincial towns, where, in the majority of cases, works on Natural History are only sparingly to be found. I therefore proposed to myself the illustration of the *Pediculidæ* and *Nirmidæ*, under a conviction, that a work exclusively devoted to these families, concentrating all that was known, with figures of the species, however imperfectly it might be executed, was a desideratum to the Entomological Literature of this country. Upon communicating these views to my learned friend William Sharp Mac Leay, Esq., he strongly urged me to proceed, and promised all the assistance his own extensive knowledge of Entomology enabled him to give, as well as that assistance which his friendship could secure from other distinguished individuals. With such promises of aid I could no longer delay the commencement, and carrying on this essay to its completion, which, however, has greatly exceeded the limits I had calculated upon at the outset; still it is most probable many species remain unrecorded, as several of the rarer, and some

of the more common of our quadrupeds and birds have been searched in vain.

The opinion that *each* and every animal has its own peculiar parasite, is not borne out by facts, for although in the majority of cases a distinct species of insect is found upon each particular animal, *i. e.* quadruped or bird, yet there are several instances where the same kind infests three or four different species of birds, but in such exceptions they are almost always confined to individuals of the same genera or family, or at least to species of similar habits. This is more strictly the case with birds than quadrupeds. For instance, *Docophorus icteroides,* I have found on nearly every species of duck which has come under my notice. I have received it from other birds also, but they were of aquatic habits, and belonging to the order Natatores. The *Nirmus obscurus* infests several species of Sandpipers, Godwits, &c. The *Nirmus rufus,* upon several of the Hawks and Falcons; and *Docophorus Lari* upon nearly all the Gulls. In the instances among quadrupeds, it is rather doubtful whether the species is common to two different animals or not, or whether they may not have been merely transferred by associating or frequenting the same place of abode; as for example, the *Trichodectes scalaris* found upon both the Ox and the Ass, where the animals are feeding in the same stall, or sleep together, a transfer of property might easily be made. The *Hæmatopinus Piliferous* infests Dogs, and I have received specimens from the Ferret, which last animal was said to swarm with them. Here it is rather difficult to account for the occurrence, as I am not aware that the two animals ever live upon friendly terms with each other; and moreover, the person from whom I received them informed me he had *not* a dog. When we extend our observations to genera, we find they take a much wider range, and it is in only two or three cases, that we could with any confidence assert that they

were diagnostic of certain families of Vertebrata. It is easy to say whether they are belonging to quadruped or bird, but more difficult to pronounce the peculiar family of either, as some genera of each division appear perfect cosmopolites; as for instance, the genus Pediculus of Linn. (since divided into Pediculus and Hæmatopinus), besides infesting Man, is also found in the orders *Quadrumana*, on Monkeys; *Rodentia*, on the Squirrel, Hare, Rabbit, Water Rat; *Carnivora*, on the Dog and Seal; *Pachydermata*, on the Swine, Ass, and Camel; *Ruminantia*, on the Deer, Ox, and Buffalo. The genus Nirmus again is very extensively spread, infesting every order of birds but the *Gallinacea*. Docophorus all but *Gallinacea* and *Columbidæ;* Lipeurus infesting the orders *Gallinacea*, *Grallæ*, *Palmipedes*, and *Accipitres*, while on the other hand, a few, as I have stated, are nearly certain indexes to the families—Eureum only on *Chelidones*, Trinoton only on *Palmipedes*, Goniocotes and Goniodes only on *Gallinacea* and *Columbidæ*, Gyropus only on the Guinea Pig in this country. Dr. Burmeister enumerates a species also from the Ai (Bradypus tridactylus), and lastly, the genus Phthirius on Man.

From the great diversity in colour and size during life, and alteration of form and change of colour after death, considerable difficulty has been felt in coming to correct conclusions as to the proper form and colour of individual species, and even now the author is not without fear, that he may be charged with error. To this, however, he has only to reply, that as far as possible he has endeavoured to avoid misrepresentation, by re-drawing many species when fresh specimens could be procured, and even after some had been committed to copper, he has been compelled to re-engrave them. He therefore hopes upon this point to be criticised with mercy: again, so considerable is the difference that exists between the early and adult state of many species, that their identity could only be inferred by

examining a series of specimens, by which means he has in many cases removed doubts; still he fears that in others, where he has not had this advantage, some specimens figured as species may eventually prove the young of others. One instance has occurred since the 12th plate was engraved, the 3rd figure of which Dr. Burmeister informs me is only the young of *Goniodes falcicornis*, which I shall not dispute. Though I would observe, that in examining specimens of the G. *Stilifer*, *Tetraonis* and *Compar*, at various ages, I do not see such a difference in the structure of the antennæ, as exists between these two insects.

In the progress of this work, however, the author has had to contend with repeated rebukes from his friends for entering upon the illustration of a tribe of insects whose very name was sufficient to create feelings of disgust. "*Why not take up some more interesting or popular department of Entomology*," has been the frequent remark made to him. He considered, however, that if he wished to render any service to science, he must not consult popular taste or ephemeral fashion, but must take a page from that part of the great Book of Nature,* less generally read, and consequently, less understood and appreciated by the world at large.† The habits or size of an animal should form no item in the scale of man's estimation as to its usefulness. That each is formed especially for some part in the economy of the universe, and that its structure is admirably and peculiarly adapted and constructed for the accomplish-

* "Nature is a book written on both sides within and without, in which the finger of GOD is clearly visible, a species of Holy writ in a bodily form—a glorious Panegyric, as it were, on GOD'S OMNIPOTENCE, expressed in the most vivid symbols. The outer part of this sacred volume attests the supreme power, wisdom, and goodness of the Creator in characters too clear and luminous to be unperceived or misread by the dullest or the most vitiated eye. The inner pages comprise a still more glorious revelation, but their language is more mysterious."—*Fred. von Schlegel, Phil. of Life, p.* 85.

† There are yet "in the instructive book of nature, many leaves which hitherto no mortal has perused."—*Pontoppidan, Pref. p.* 1.

ment of its office, no rational being can for an instant doubt. Therefore, if we cannot in every instance see the immediate end and object of their existence, it is surely more becoming our humility to admire in ignorance the wisdom of God in the works of creation, from a conviction that, that which is is right, than vainly endeavour to scrutinize or criticise the individual links of that chain by which all nature is kept in harmony and order; since the smallest, or the most loathsome creatures to human conception are alike to that Being, "Who giveth food to all flesh, for his mercy endureth for ever." The habits or history of the intestinal worms are, perhaps, equally unpleasing or disgusting to the partial admirers of nature. Yet by the laborious investigations and patient research of Rudolphi, 993* species of Entozoa have been described in his im mortal Entozoorum Synopsis, by which he has erected for himself an imperishable monument, shewing that to a man of such gigantic powers of mind, whose studies embraced nearly every department of science, the noxious and obscure claimed his especial attention, well knowing that it was the same, whether with devout awe we contemplate the spanless arch of Heaven, lit up with countless myriads of distant glittering worlds, and endeavour to trace the laws by which they are governed and guided through the vast of space, or reduce our investigations to the structure and habits of those humble semi-motionless beings whose dwelling-place is cast in the Hepatic cells, or Cerebral sinuses of the sheep, the eye ball of the Perch, or the 20 species which infest almost every portion of the human frame,† all, and each alike dis-

* Linnæus had indicated only 11 species of intestinal worms in the 12th edition of his Syst. Nat. Gmelin in the 13th edition 299. Zeder. 391. Rudolphi's first great work on intestinal worms, Entozoorum historia naturalis, contains descriptions of 603.

† More than 20 of these pestiferous creatures that attack man have been enumerated, some penetrate into the very seat of thought, (Echinococcus Hominis,) others disturb his bile, (Fasciola hepatica,) others circulate with

play the wisdom, power, and all-superintending care of the Lord of earth and sky, who in the beginning created the heavens and the earth, with all that they contain, and who equally gives to man for his guidance and instruction his word and his works.

"In His Creation as in His government, the Creator embraces at all times, with His all-comprehending kindness the innumerable and the unbounded—the infinitesimals, as well as the immensities of nature—the invisible from disappearing smallness, no less than the imperceptible from incalculable remoteness. We may overlook what is petty as beneath the notice of our pride; but nothing, however small, has been deemed worthless, or is disregarded by Him, whom no name or language can sufficiently describe; whose power is Omnipotence; whose presence is universal; whose knowledge is omniscience; whose creations extend and constitute space; and whose existence is eternity."

"These are thy glorious works, thou Source of good!
How dimly seen, how faintly understood!
Thine and upheld by thy paternal care,
This universal frame, thus wondrous fair;
Thy power divine, and bounty beyond thought,
Adored and praised in all that thou hast wrought.
Absorb'd in that immensity I see,
I shrink abas'd, and yet aspire to thee;
Instruct me, guide me to that heavenly day,
Thy words, more clearly than thy works display,
That, while thy truths my grosser thoughts refine,
I may resemble thee, and call thee mine."

COWPER.

---

the blood in his veins, (Linguatula Venarum,) others again are seated in his kidneys, (Strongilus gigas,) others in his muscles, (Hydatigera cellulosa,) the guinea worm, (Filaria medinensis,) in his cellular tissue: the ovaries of females are infested by another (Linguatula pinguicula), the tape-worms extend themselves joint by joint to an enormous length in his intestines, (Tænia solium and Botryocephalus Hominis,) some select the large intestine (Trichocephalus Hominis), and others, the small ones, (Ascarus lumbricoides,) some even attack infants, and them only, (Oxyurus vermicularis.) —"*Kirby's Bridgewater Treatise*," Vol. 1. p. 324.

A difference of opinion appears to have existed amongst Entomologists, as to whether the Pediculidæ and Nirmidæ, undergo any metamorphoses. The late distinguished Professor Nitzsch, who had paid more attention to the History of the Epizoica than perhaps any other Zoologist of the present day, in his paper on the families and genera of animal insects,* says—"Metamorphosis indistincta subnulla, (larva pupaque agili, currente, vorante, imagini persimili)." Our own talented countryman, the late Dr. Leach, who had also attended to the economy of this tribe, and contemplated publishing upon them, was satisfied they underwent no change, at least not such as we consider metamorphosis. Hence he placed them in his sub-class *Ametabolia* (insects undergoing no metamorphosis), while Dr. Burmeister, whom I consider the first authority for this tribe of insects, arranges them under his sub-class *Hemimetabola*. ("Insects with an imperfect metamorphosis, *i. e.* larva, pupa, and perfect insect, strongly resembling each other, the pupa possessing locomotion and eating."—) This last I consider the most correct view which can be taken, for although there is not a metamorphosis as in the more persect insects, consisting of larva, pupæ, and imago, widely differing from each other in general appearance, habits, and functions; yet a series of semi-transformations takes place in the shedding of the skin a definite number of times, by which the individual acquires a greater symmetry of form and appearance, and most probably a greater perfection of parts or organs; though the latter may not be so evident to our sight as in the former. Having obtained several nits or ova of *Hæmatopinus*, *Eurysternus*, and *Suis*, and placed the same in a quill which I carried in my waistcoat pocket, from the warmth they thus received I soon became sole proprietor of a family of my young friends. These I examined soon after their exit from the ova, but

* Die Familien und Gattungen der Thierinsekten, Von Dr. C. L. Nitzsch. —Germar's Magazin der Entomologie, iii. pp. 261, 316.

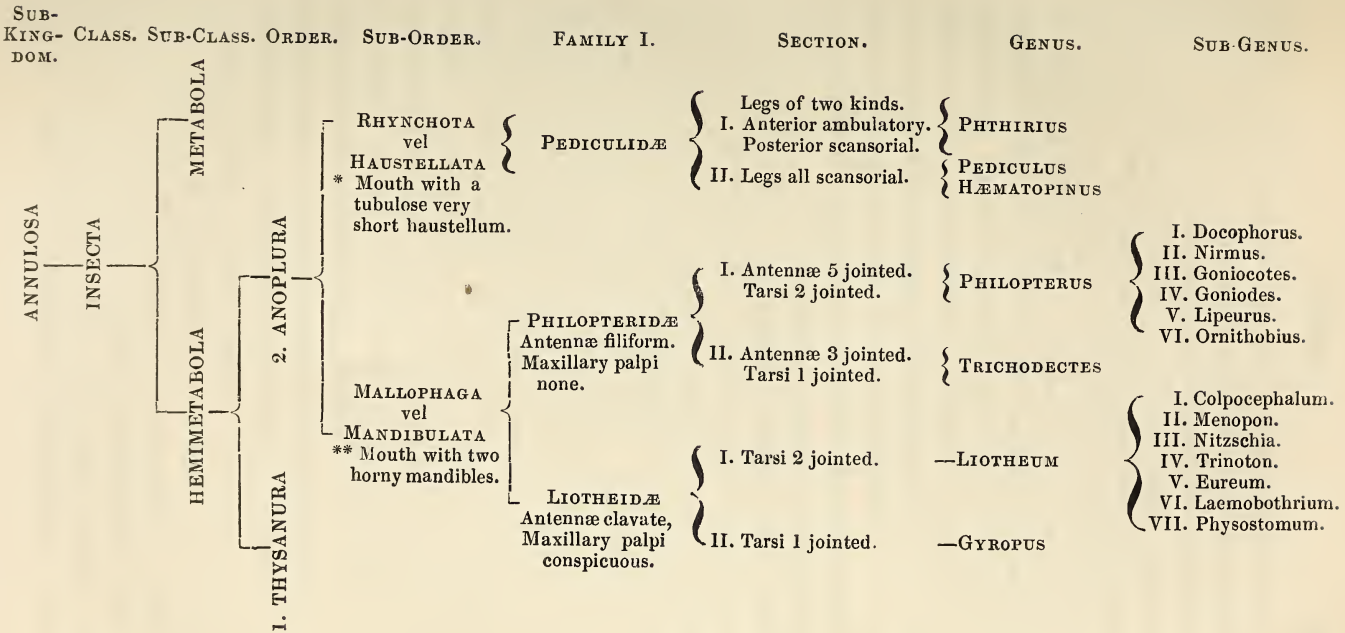
could not discover such a difference in their appearance, as would have led me to suppose them in the larvæ state; the antennæ and legs were much thicker in proportion to the bulk of the whole body, than when full grown : in fact they bore pretty much the same resemblance to the mature insect, that a lamb bears to a ewe, being ill-proportioned in the legs, &c. In point of activity, however, they much exceeded the adult, and moved with a degree of rapidity not usual to such insects, at least to the Family Pediculidæ. In many species as will subsequently appear, a very great difference in colour and markings is observable after each moult, so much so, that unless an opportunity of examining a series of all sizes and ages occurs, the identity of the species would scarcely be conjectured. Lastly, Mr. Westwood, in his able and elaborate Introduction to the Modern Classification of Insects, holds the same opinion as Dr. Leach, that these animals undergo no metamorphosis, and from his investigations having induced him to consider a distinct metamorphosis as the fundamental characteristic of the class Insecta, he consequently excludes the Lice (Anoplura), as well as the Spring-tailed Insects (Thysanura), from the class Insecta altogether: I could have wished Mr. Westwood had given his views as to what class he considered they ought to belong—? With respect to the Classification and Natural History of this remarkable order of parasites, although both have been neglected, there is not such diversity of opinion concerning the former as there is obscurity and paucity in the latter. In the earliest attempt at the classification of animals with which we are acquainted, that of Aristotle (330, B.C.), there is a division of the insects, Ἔντομα, into two orders, deduced from the presence or absence of wings, whence we have Ἔντομα πτιλωτὰ, and Ἔντομα ἄπτερα; divisions considered so perfectly natural as to have been retained by nearly all succeeding writers. Though the peculiar insects with which

we have to do are not alluded to, yet we may be sure they were classed by him under his second order Aptera, and which, although containing an heterogenous assemblage of insects of very different habits and economy, but agreeing in the one character of being wingless, we find adhered to in the subsequent systems of Swammerdam, Linnæus, De Geer, Clairville, Cuvier, Kirby, &c : in other systems it forms the basis, although different terms are employed. The first attempt at figuring or enumerating species occurs (I believe) in Hooke's Micrographia, 1665, in which is a good plate of Pediculus Humanus. In 1685, Swammerdam's "Biblia Naturæ" appeared, containing elaborate anatomical details of the same insect. Redi, in 1688, produced his "Esperienze Intorno alla Generazione Degl' Insetti," with thirty-four figures of the Lice of Mammalia and Birds. In 1736 Albin published his "Natural History of Spiders, and other curious Insects," wherein are figures of all those species given by Redi. From 1761 to 1781 appeared the Systema Naturæ, and Fauna Suecica of Linnæus—Scopoli's Entomologia Carniolica—Geoffrey's Histoire abrègée des Insectes—O. Fabricius's Fauna Grœnlandica—Fabricius's Systema Entomologiæ, and Species Insectorum, with one or two other works of less note, in all of which are enumerated or described several species of *Pediculus*, for up to this period no writer appears to have considered a separation necessary of the Mandibulata from the Haustellata, but all were united under the Genus *Pediculus*. In 1783, however, De Geer in his "Genera et Species Insectorum," attempted a revision, and divided the skin-eaters from the true blood-sucking Lice, under the generic name of *Ricinus*. Panzer and Clairville, however, who followed soon after, retained the old grouping of such different organizations under one Genus. In 1804 Dr. Hermann produced his "Memoire Apterologique," in which he recognized a distinction similar to that established by De Geer, but gave

the Mandibulata the generic name of *Nirmus*, which was retained in the works of several subsequent writers. In 1806 Latrielle gave the world his "Genera Crustaceorum et Insectorum," in which, under the Order Parasita, which he had instituted in 1796, he arranged both Pediculi and Nirmi, the first as a family denominated Edentula, the second Mandibulata. In 1815 Lamarck published that part of his Histoire Naturelle des Animaux sans Vertebres, which contained insects, arranged with slight variations, according to a system he had propounded many years before, in which the Hexapod aptera are placed with the Arachnidæ. The Haustellate species as the Genus *Pediculus;* the Mandibulate as the Genus *Ricinus.* In the same year Dr. Leach published in the Edinburgh Encyclopædia an arrangement of insects into orders, and placed them with the Parasita and Thysanura (which Lamarck had removed to the Arachnida), the former constituting a new order, *Anoplura*, in which the Suctorial group is sub-divided into three genera —*Phthirius*, *Pediculus*, and *Hæmatopinus;* the masticating group, remaining under the Genus *Nirmus.* In 1818 Dr. Nitzsch published in Germar's Magazine der Entomologie, a Prodromus of the families and genera of Animal Insects (Insecta epizoica), in which an extensive sub-division of the Nirmi is effected, the characters of genera and sub-genera laid down, and upwards of eighty species enumerated, the order Aptera is abolished, and the wingless genera located under such other orders as they appear to be most nearly allied to: thus the Mandibulata with the Orthoptera, and the Haustellata with the Hemiptera. In 1821 MacLeay's Horæ Entomologicæ appeared, a work exhibiting a profound knowledge of the natural affinities and analogies of the whole of the Annulose tribes. In this system the Pediculidæ and Nirmidæ underwent little or no change as to rank. The class Insecta is sub-divided into three supposed equal sub-classes —Mandibulata, Haustellata, and Ametabola, in the last

of which is placed the Anoplura; the first two agreeing in undergoing a distinct metamorphosis, but differing from each other in their oral apparatus: the third differing from the two preceding in not undergoing any perfect metamorphosis, but agreeing with them in containing insects, of both the divisions Haustellata and Mandibulata. In 1826 Messrs. Kirby and Spence, in the fourth vol. of their justly celebrated Introduction to Entomology, inserted a classification of Insects in accordance with their views: where we find our Parasites again placed in an order Aptera, but of a more comprehensive character than usual, embracing three sub-orders: the Hexapods (Thysanura and Anoplura of Leach), the Octopods (Arachnides Tracheales of Latr.), and the Polypods (the Myriapoda of Leach and Latr.). In 1829 Mr. Stephens produced his Systematic Catalogue of British Insects, in which, under the second division of the Class Insecta, Haustellata, the Lice constitute solely the Order Aptera, rather a striking contrast to the preceding, which included so many.* From 1835 to 1840 Dr. Burmeister published his Handbook of Entomology, and Genera Insectorum, containing a system of classification, and descriptions of a number of species of Anoplura; the arrangement followed is that of Nitzsch with additions. The *Pediculidæ*, under a new order Rhynchota, and the *Nirmidæ* under that of Mallophaga, divisions equivalent to Mandibulata and Haustellata, or to the Orders Hemiptera and Orthoptera. The division of the Rhynchota is in accordance with Dr. Leach's system into three genera: the general grouping of the Genera and Sub-Genera being such as meet my views. I have adopted it in this Monograph, with a slight modification, viz.: retaining the Order Anoplura of Leach, and reducing those of Rhynchota and Mallophaga to the rank of Sub-Orders. The annexed Table which I have sketched will exhibit more clearly my ideas.

* See note † page xxiv.


Sub-Kingdom.
Class.
Sub-Class.
Order.
Sub-Order.
Family I.
Section.
Genus.
Sub-Genus.
ANNULOSA
INSECTA
METABOLA
HEMIMETABOLA
2. ANOPLURA
1. THYSANURA
RHYNCHOTA vel HAUSTELLATA * Mouth with a tubulose very short haustellum.
MALLOPHAGA vel MANDIBULATA ** Mouth with two horny mandibles.
PEDICULIDÆ
PHILOPTERIDÆ Antennæ filiform. Maxillary palpi none.
LIOTHEIDÆ Antennæ clavate, Maxillary palpi conspicuous.
Legs of two kinds.
I. Anterior ambulatory. Posterior scansorial.
II. Legs all scansorial.
I. Antennæ 5 jointed. Tarsi 2 jointed.
II. Antennæ 3 jointed. Tarsi 1 jointed.
I. Tarsi 2 jointed.
II. Tarsi 1 jointed.
PHTHIRIUS
PEDICULUS
HÆMATOPINUS
PHILOPTERUS
TRICHODECTES
—LIOTHEUM
—GYROPUS
I. Docophorus.
II. Nirmus.
III. Goniocotes.
IV. Goniodes.
V. Lipeurus.
VI. Ornithobius.
I. Colpocephalum.
II. Menopon.
III. Nitzschia.
IV. Trinoton.
V. Eureum.
VI. Laemobothrium.
VII. Physostomum.

As it was an indispensable part of my investigation to attach a specific appellation to each species which appeared undescribed, of which there occurred ninety-three; I have been most anxious, in every instance, to avoid giving a fresh name where one was already in existence, when this could be ascertained, but in many cases it has been impracticable, from the fact, that although a great number of species have been named and described by the late Professor Nitzsch, his MSS. have not been published, thereby precluding the opportunity of comparing specimens with his characters. This loss has been partially compensated for by the worthy successor of Nitzsch to the chair of Zoology in the University of Halle, Dr. Burmeister having characterized several species in his valuable works, the "Handbook of Entomology" and "Genera Insectorum." The remainder, it is to be hoped, will soon be made public in an extensive work Dr. B. is at present engaged upon, on the whole of the Theirinsecten or Epizoica of Nitzsch, comprising several hundred species. To fulfil this task no individual has such ample means at his disposal of doing justice to the subject, not only from his profound research and intimate acquaintance with the science, but from his succeeding to the invaluable and extensive collection of specimens, as well as the MSS. of his predecessor. In expectation, therefore, of so valuable a contribution to the Entomological literature of Europe, I wish this Monograph to be considered as only a Prodromus of the Anoplura of Great Britain, inasmuch as many additions will undoubtedly be made of species which I have not had the good fortune to obtain; and in every instance where I have given a specific appellation wish it to be provisional, and superseded by any other which may be thought more appropriate, or which may claim priority, but of whose existence I was ignorant. Indeed, had I been aware of the above work of Dr. Burmeister's, before I commenced my attempt at illustrating the same

Families of Insects, it would not have been undertaken. In attaching names to such species as appeared undescribed, I have in most cases preferred deriving them from that of the *genus* or *species* of quadruped or bird upon which they are parasites, which affords a certain degree of information when looking over the synopsis for the purpose of ascertaining a particular species.

In conclusion, the Author feels that his gratitude is due for the interest taken in his labours by so many kind friends, whose assistance in forwarding specimens from various parts of the kingdom he begs publicly to acknowledge. Amongst these he is especially indebted to the Rev. Leonard Jenyns, A.M., of Swaffham Bulbeck, in Cambridgeshire; William Thompson, Esq., of Belfast (both of whose entire collections were placed in his hands); William M. Tweedy, Esq., of Truro; Sir William Jardine, Bart., of Jardine Hall, Dumfriesshire; Prideaux John Selby, Esq., of Twizell House, Northumberland; T. C. Heysham, Esq., of Carlisle; Professor Burmeister, of the University of Halle; William Wallace, Esq., of Douglass, Isle of Man; Dr. Southby, of Amesbury, Wiltshire; Wm. Milner, Esq., of Rochdale; Henry Doubleday, Esq., of Epping; Rev. William Little, of Kirkpatrick, juxta Moffat, Dumfriesshire; Mr. Abraham Clapham, of Potter Newton; Mr. Calvert, of Leeds; and Mr. G. R. Denny, of Norwich. To two of the above friends the Author is under obligation for assistance of another kind. From the great increase in the number of species above what was calculated upon when this Monograph was commenced, although it enabled him to render a greater service to science, at the same time placed such a barrier in the way, as to preclude the publication of the work at the original price announced in the prospectus; for, independent of the work paying its expenses, which is the least remuneration an Author is entitled to look for, it threatened a serious

loss; while in this dilemma the British Association for the advancement of Science, held its meeting in Glasgow, when Sir William Jardine proposed, and Mr. Selby seconded, a recommendation that the sum of £50. sterling should be granted for the purpose of assisting to further our knowledge of the British Anoplura. This motion was carried, and the above sum very handsomely placed at my disposal to remove in part the above difficulty.* Lastly, to Dr. Greville, of Edinburgh, I feel deeply indebted for his exertions to forward my views, by procuring me patronage, in the way of subscribers, which in the early part of my labours stimulated me to proceed.

"Still let me various Nature scan,
The world's my home, my brother man,
And God is every where."—PETRIE.

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* The following gentlemen were appointed as Trustees to see the object of the grant carried into effect—Sir Wm. Jardine, P. J. Selby, Esq., Wm. Yarrell, Esq., and Dr. Lankester.

† *Note to page* xx.—Among the ARTICULATA collected by Captain Back, in his Overland Expedition, were several species of Nirmi which were described by Mr. Children in the Appendix to the account of the above journey, and the arrangement followed is that of Nitzsch.

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ORDER II.

ANOPLURA.

FAMILY I.

PEDICULIDÆ.

"And it became lice in man, and in beast. All the dust of the land became lice throughout all the land of Egypt."

EXODUS viii. 17.

"It is not the heavens alone that "declare the glory of God,"—nor "the firmament" only which "sheweth his wondrous works." His Omnipotence, his Wisdom, and his superintending Providence are equally manifested in the meanest worm that creeps upon the earth, and in the lowest of the radiated tribes that slumber in the coral caves of Ocean."

Sub-Class I. HEMIMETABOLA. *Burmeister.*

Order II. ANOPLURA. (Leach.)

Aptera *Linne.*—Antliata, *Fabr.*—Arachnida-Parasita, *Latr.*—Rhophotera, *Clairville.*—Rhynchota, *Burmeister.*—Arachnides Acaridiennes, *Lamarck.*

Section I. HAUSTELLATA.

FAMILY I.

PEDICULIDÆ. (Leach.)

Hemiptera Epizoica (*Nitzsch*). Fam. II. Siphunculata, (*Lat.*)

ESSENTIAL CHARACTER.

Antennæ of five joints, mouth with a fleshy Haustellum.

NATURAL CHARACTER.

Apterus, parasitical; mouth consisting of a fleshy tubulous inarticulate haustellum, armed at the extremity with retractile hooks; legs scansorial, tibiæ short thick, armed at the apex on the inner side with a strong tooth, which, together with the large curved tarsus and unguis, forms a claw; tarsus one-jointed, unguis single; œsophagus none; biliary vessels four, free, equal in length, enlarged towards their extremities. Males with two testicles on each side;

Females with five ovaries on each side the uterus, (pl. 19. fig. 3.) Coitus exercetur mare femine submisso.—Food the blood of animals.

ARTIFICIAL DIVISIONS OF THE FAMILY.

PEDICULIDÆ.

I. Legs of two kinds, anterior ambulatory, posterior scansorial; thorax large, not distinctly separated from the abdomen. . . . . Genus I. PHTHIRIUS.

II. Legs all scansorial; thorax large, not distinctly separated from the abdomen; abdomen of seven segments. Genus II. PEDICULUS.

III. Legs all scansorial; thorax generally narrower than the abdomen, and distinctly separated; abdomen of eight or nine segments. . Genus III. HÆMATOPINUS.

SYNOPSIS SPECIERUM.

PEDICULIDÆ.

Genus I. PHTHIRIUS.

I. Inguinalis. P. Corpore subflavo, sordido, papillis minutissimis nitide distincto; abdomine paululum quadrato; thorace utrinque nigrâ maculâ circum spiracula magno, perspicuo, subfulvo; unguibus castanei coloris. Long. $\frac{1}{2}$—1. Hab. Genus Homo.

Genus II. PEDICULUS.

Stirps I. Abdominis segmentis septem.

I. Capitis. P. Cinereo-albus, thorace elongo quadrato; abdomine ovato; utrinque lobato cum margine subnigro, incontinuo. Long. $\frac{2}{3}$—$1\frac{1}{2}$. Hab. Genus Homo.

II. Vestimenti. P. Sordidus subalbus, immaculatus, elongatus, ovatus; capite valde porrecto; thorace antice compresso; abdomine segmenta obscure impressa habente. Long. $1\frac{1}{4}$—$1\frac{3}{4}$. Hab. Genus Homo.

III. Tabescentium. P. Subflavus; capite rotundo; antennis longis; thorace magno, quadrato; abdomine magno cum segmentis arcte cohærentibus. Hab. Genus Homo.

Genus III. HÆMATOPINUS.

Stirps II. Abdominis segmentis octo.

I. Acanthopus. H. Subflavus; capite et thorace sub ferrugineis; abdominis margine laterali ferrugineo reflexo,

spinuloso; femoris posterioris apice valde edentato. Long. $\frac{1}{2}$. Hab. Arvicola agrestis.

II. Spinulosus, H. Subfulvus, spinulosus; occipite lato, fere obtuso; sex priorum segmentorum abdominis margine laterali dentato; pedum pare posteriori valde magno, crasso. Long. $\frac{1}{3}$. Hab. Mus decumanus.

III. Spiniger. H. Capite elongato; occipite acuto; abdomine ovato, cum sex priorum segmentorum margine laterali valde edentato; pedibus crassis, fere æquis. Long. $\frac{1}{3}$. Hab. Arvicola amphibia.

Stirps III. Abdomine segmentis novem.

IV. Lyriocephalus. H. Testaceus; abdomine glauco-flavo; capite lyræformi, fronte acuta, occipite acuminato; antennis subclavatis; pedibus paululum gracilibus. Long. $\frac{3}{4}$. Hab. Lepus timidis.

α. Capite brevi lato, thoracis longitudine.

V. Piliferous. H. Testaceus; capite brevi, lato, longitudinem thoracè fere æquo; abdomine cadaveroso, capillis subfuscis dense umbrato. Long. 1—$1\frac{1}{4}$. Hab. Canis familiaris.

VI. Eurysternus. H. Nitidus, castanei coloris; capite subtriangulari; occipite rotundo; thorace transverso, quadrato; abdomine magno, ovato, cinereo-albo, cum spiraculis fuscis, prominentibus. Long. 1—$1\frac{1}{4}$. Hab. Bos Taurus.

VII. Ventricosus. H. Opacus, castanei coloris; capite sub-lyræformi; abdomine magno, tumido, cadaveroso, albo; tarsis castanei coloris. Long. $\frac{1}{3}$—$\frac{1}{2}$. Hab. Lepus cuniculus.

β. Capite elongato angusto, thoracam exedente.

VIII. Vituli. H. Castaneus; capite sub-lyræformi; abdomine longo, sub-cylindrico, cinereo-albo; pedibus valde crassis. Long. 1—$1\frac{1}{4}$. Hab. Bos Taurus.

IX. Asini. H. Ferrugineus; abdomine magno, subfulvo, albo cum corneis excrescenteis utrinque circum spiracula; capite valde longo, post antennas valde sinuato. Long. 1—1¾. Hab. Equus, Asinus.

X. Suis. H. Fusco-ferrugineus; abdomine cæsio glauco, cinereo-flavo, plano cum excrescentia nigra cornea circum spiracula singula alba; pedibus longis, crassis; femore fasciato; tibiis abrupte clavatis, apice fuscis. Long. 1¾. Hab. Sus scrofa.

X. Sphærocephalus. H. Capite orbiculari: pallidus; segmentis abdominalibus quinque anticis dente recto armatis. Long. ⅓. Hab. Sciurus vulgaris.

XI. Serratus. H. Capite breviore, genis post antennas incrassatis; lividus, abdomine in basi angusto, segmentis utrinque dilatatis, marginem abdominis serratum referentibus. Long. ⅓. Hab. Mus Musculus.

XII. Affinis. H. Pallidus, sincipite parabolico genis post antennas incrassatis; thorace rhombeo. Long. ⅓. Hab. Mus sylvaticus.

XIII. Setosus. H. Fuscus, undique fusco setosus. Long. . Hab. Phoca Grœnlandica.

XIV. Crassicornis. H. Capite majori cum thorace angustiori pedibusque testaceo, abdomine albido; spiraculis non prominentibus. Long ⅔. Hab. Cervus Elaphus.

XV. Stenopsis. H. Testaceus unicolor, abdomine elongato ovali, pilis longis sparsis obsesso. Long. 1. Hab. Capra hircus.

Genus I. PHTHIRIUS. (*Leach.*)

(Pediculus of Authors.)

GENERIC CHARACTER.

Head pandureform; anterior part produced, roundish or lobate; apex prominent, sheathing the rostrum; sides sinuated; base broad and rotundate.

Eyes small, somewhat prominent, situated on the sides of the head immediately behind the antennæ.

Antennæ filiform, five-jointed; the first the largest, the remainder nearly equal. (*l*)

Thorax very broad and flat, wider than the abdomen, truncated anteriorly, and receiving the head in a deep sinus; sides lobate, with a single spiracle on each side between the first and second pair of legs.

Abdomen large, flat and cordate, intimately united with the thorax, of eight segments; the first three very minute, and aggregated so as to appear as but one, but distinguished by the three spiraculi nearly in a line; the remaining five segments large and distinct, especially at the lateral margin, which has four moveable fleshy protuberances on each side arising from the inferior surface, having their apices terminating in a fasciculus of seti.

Legs long, heteronomus: *anterior* formed for walking (*k*); somewhat slender, gradually tapering; *tibia* entire, cylindrical; *ungues* long and slender; *posterior* four, very much thickened, formed for climbing (*m*); *tibia* larger than the femur, sinuated at the apex, and armed about midway with a strong tooth; *tarsus* very large, conical, inarticulate, slightly curved, and tuberculate on

the internal edge; *unguis* large, thick, reflexed towards the tooth near the apex of the tibia, from which several bristles arise, which enables the animal to adhere with greater pertinacity to the surface upon which it is moving.

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1. Phthirius inguinalis. (Crab Louse.)

Plate XXVI. Fig. 3.

Body dirty yellow-white, beautifully chagreened with minute papillæ; abdomen somewhat quadrate; thorax with a dark patch on each side, encircling the spiracle; legs pale, fulvous; ungues chestnut. Length ♂ ½, ♀ 1.*

Pht. inguinalis. Leach, Zool. Misc. iii. p. 65. Leach, Edinb. Ency. ix. p. 77. Leach, Ency. Brit. Supp. i. pl. 24. Samou. Ent. Comp. p. 142. Burmeister, Hand Ent. i. pt. 1. p. 58. Burmeister, Gen. Insect. Rhyn. Step. Cat. pt. ii. p. 329.—Pediculus inguinalis. Redi Exper. pl. 19.—Pediculus pubis. Linn. Syst. Nat. ii. p. 1017. Faun. Suec. 1940. Fab. Ent. Syst. iv. p. 418. Syst. Antl. 341–3. Nitzsch. Germ. Mag. iii. p. 305. Berk. Syn. i. p. 170. Stew. ii. p. 297. Turt. iii. 695. Albin. Spi. pl. 49. fig. sinist.—Pou du pubis. Latr. Hist. Nat. d. Crus. et d. Inst. viii. p. 94.—Le Morpion. Geoff. Hist. des Inst. ii. p. 597.—Pou du pubis. Lam. Animaux San. Ver. t. 5. p. 50–3.

Only one species of this genus is known; which infests the pubic region generally of persons of dissolute habits. It however occasionally spreads over other parts of the body. Instances are known, though very rarely, of its appearing upon individuals whose habits are quite the reverse. Specimens of this species were forwarded to me by a physician of the highest respectability in the south of England,

* The measurements adopted in this work refer to a *line* and its fractions.

together with the case of his patient, a lady who was infested by them in a most extraordinary manner. Although I do not feel at liberty to give the names of the parties, I cannot refrain, having his permission to make the circumstances of the case public, by quoting a portion of his letter to me. "The accompanying insects were sent to me by a lady whom I attended for some years in Devonshire. The following is a slight sketch of her case. She was about fifty years of age, spare in person, of a highly susceptible temperament, and long subject to disordered digestion; suffering from severe headache, attended by biliary vomiting, and often followed by boils on or about the head. After a while, she informed me that she had been for some time troubled by insects coming apparently from the natural orifices of the body and infesting the surface, particularly when warmer than usual. She complained especially of the annoyance caused by their presence in her eyes and ears, and subsequently about the neck of the bladder, and some other parts connected with external openings. She said that they were often numerous in her throat; and that they were more than once discovered adhering to matters ejected from the stomach, after having been for some time troubled by these parasites. They did not make any permanent lodgement on the surface, from which they were stated to be at times removed in great numbers; nor did they get among the hair. The lady was a person in whose veracity I had much confidence, very intelligent, well-informed, and religious. Her statement was in all its parts confirmed by a young woman who lived with her, partly as servant, partly as companion. She said that being now and then called upon to sleep with her mistress, she was at such times greatly tormented by these insects, which she caught in numbers on her skin, but which had no tendency to continue or

breed there. The only parts on which I ever saw them myself were the inner angles of the eyes, on the tarsal conjunctiva, and in the ears. The application of those external remedies which readily destroy the common species of Pediculi, failed entirely in extirpating these; a variety of internal means were likewise used unavailingly, and the insects were not admitted to be sensibly diminished in number at the time of my quitting Devonshire;" though the patient's general health had been a good deal benefitted by the treatment. In fact she considered that her feelings were on the whole most comfortable when these 'small deer' were disposed to take an airing. A great similarity will be observed in this case and that of Lady Penruddock, recorded by Mouffet, with the exception that her disease was *Acariasis*, and of a more terrific nature and termination; while this was a pure case of *Phthiriasis*, and caused by the genus *Phthirius*. Whereas many of the cases attributed to this disease were said to be caused by Pediculi, some of which are correctly reported; while others are doubtless caused by *Acari*, which an unentomological observer might easily confound. To one or other of these maladies, confounded under the term *Morbus pedicularis*, however, we find that the rich, the wise, the noble, and the mighty have fallen victims. Exclusive of other names of less note are those of Pheretima, as recorded by Herodotus, Antiochus Epiphanes, the Dictator Sylla, the two Herods, the Emperor Maximian, and Philip the Second.

Genus II. PEDICULUS.

Linn. Fabr. De Geer. Geoff. Redi. Hermann. Swam. Lam. Leach. Step. Nitzsch. Burmeister.

GENERIC CHARACTER.

Head flattened, subglobular, produced in front; mouth at the extremity, lateral margin deeply sinuated before the antennæ, occiput somewhat acuminate.

Haustellum retractile within the head, when at rest, consisting of a soft tubulose sheath (*e*), capable of great extension at the apex (*f*); armed with a double series of minute horny hooks (*g*), from the centre of which proceeds four bristles converging to each other at their points and forming a tube (*h*).*

Antennæ filiform, of five joints, the second the longest, the remainder equal, the last joint terminated by a fasciculus of bristles.

Palpi none.

Eyes prominent, simple? situated on the lateral margin of the head, about midway between the antennæ and the occiput.

Thorax narrower than the abdomen, sub-conical, with the pro-thorax, meso-thorax, and meta-thorax, indistinctly indicated, with a single spiracle between the first and second pair of legs, on each side of which is a setiferous papilla.

Abdomen large, flat, indistinctly separated from the thorax. The segments seven in number, well defined at the lateral margin, but obscure in the centre; surface beautifully papillose, having the appearance of chagreen; spiracles always six and placed upon the first six seg-

* The letters refer to the dissections in plate 26.

ments, and generally orbicular; last segment in the female deeply bilobate.

Legs all formed for climbing; the anterior pair rather slender, posterior with the femur thickened; tibia long, sub-clavate, strongly toothed at its apex; tarsus slender, sinuated anteriorly with a large fleshy pulvillus, upon which is a few setæ; ungues long slender, curved with a protuberance at the base,—in other respects like the posterior legs of the last genus.

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1. Pediculus Capitis. (Head Louse.)

Plate XXVI. Fig. 2.

Ashy-white, thorax elongate, quadrate, abdomen ovate, lobate laterally, the whole with a blackish interrupted margin.

Ped. capitis. Nitz. Germ. Mag. iii. 305. Burmeister. Hand. d. Ent. i. pt. 1. Burmeist. Gen. Insect. Lam. Ani. San Ver. v. p. 50. 2.—Pou de la tete, Lat. Hist. nat. des Crust. et Inst. t. 8. p. 94. Latr. Gen. Crust. et Inst. i. 167. 1.—Le Pou Ordinaire, Geoff. Hist. de Insect. t. 2. p. 597.—Pou human de la tete, De Geer. Mem. Inst. t. 7. p. 67. pl. 1. f. 6.—Pediculus humanus, Var. i. Linn. Syst. Nat. ii. p. 1016. Faun. Suec. 1939. Fab. Syst. Ant. 340-75. i. Syst. Ent. 804. Spe. Insect. 476. Swamm. Bibl. Natu. p. 29. tab. i. f. 2. Mull prod. 2180. Faun Frid. 798. Redi Expe. tab. 18. Redi Oper. tab. 25. Albin aran. t. 42. Bononin Microg. f. 56. Baker Micros. tab. 13. f. 4. Schaeff. Elem. tab. 95. Schrank. Beytr. 112. Sulz. Inst. tab. 22. f. 145. Ledermull. Micros. 45. t. 21. Berk. Syn. i. p. 170. Barbut genera Insec. pl. 18. 4. Stew. Elem. ii. p. 297. 2. Edit. Shaw Gen. Zool. vi. p. 450. Turt. iii. p. 695. Hooke's Micro. p. 68. pl. 66.—Ped. cervicalis, Leach. Edin. Ency. ix. p. 77. Leach Zool. Misc. iii. p. 66. Samoucllc Ent. Comp. p. 142. Step. Cat. pt. ii. p. 329.—Pou de la tete, Lam. Animaux. San Vert. t. V. p. 50-2.

Cadaverous, ashy-white, chagreened and hairy; head short, globose; occiput rotundate. Eyes large, black, and

prominent; antennæ about $\frac{2}{3}$ the length of the head, cylindrical, rather thick (*a*); thorax elongate quadrate, longer and wider than the head; its divisions slightly developed with a broad blackish interrupted margin; abdomen large, elongate ovate, the lateral margin deeply emarginate, the first six segments, with a broad blackish margin in the female, in the male with a black patch only, encircling each spiracle; legs long, thick, posterior; femur much enlarged (*j*). Length ♂ $\frac{2}{3}$, ♀ $1\frac{1}{2}$.

Some little confusion appears to exist between the Synonyms of this, and the following species, which has arisen from the circumstance of nearly all the early writers having considered them as only varieties of the same species, which was denominated Ped. Humanus. Linnæus, however, regarded them with greater precision; and although he did not designate each by a peculiar name, assigned each its locality, which he considered as constant, and retained the one specific name of humanus. As, however, no doubt can exist as to the *Capitis* and *Vestimenti* being specifically distinct, I have ventured to place the majority of the Synonyms to the most common species, the *Cervicalis* of authors, the *Capitis* of De Geer, as the most probable one which they have been describing, or rather enumerating, for many give no diagnostic characters whatever. And although this is commonly called the Head Louse, and the following the Body Louse, by way of distinction, they possess characters sufficient to identify them more correctly than a name derived from a locality, which I strongly suspect does not invariably hold good. For though the *Capitis* does, doubtless, prefer the head, and is most commonly found there, especially in those of children, from its being the part most suitable, on account of the greater quantity of hair, yet it will stray over every part of

the body.—I remember a case of an old man, whose body I examined after death at the Leeds School of Medicine, which presented one of the most humiliating spectacles it was possible to imagine, from the myriads of this species which were crawling over every part of it. In the nostrils, eyes, and corners of the mouth, were numbers congregated, and although the greater part of his hair had been cut off, what remained was literally swarming. This subject had died in one of the Fever Hospitals, and I considered the case rather uncommon, inasmuch as the Head Louse is not like its congeners, the companion of disease, or at least, ill health, produced from some temporary accident. On the contrary the *Capitis*, it is well known, is common upon the most healthy children, as well as upon adults at particular periods, whose habits are not in the least uncleanly. Latreille states,* that the Louse found on the head of the negro is *black*, while that of civilized Europe is whitish. The former, I believe, he considers as a species, and designates it *nigritarum;* Stark queries its being anything more than a variety of the *humanus*. If it is a variety at all, which I do not see any reason for supposing, it would more probably be of the Capitis. Blumenbach states that from his own knowledge the human Pediculus is also found on the Simia Troglodytes, and on the Cercopithecus paniscus. I do not presume to dispute such high authority, but would venture to observe, that the species of this family approach in many cases so closely, that any person who had not examined very minutely, would fail to detect the diagnostic marks, by which alone two similar species may be distinguished. I have found a Pediculus upon the Green monkey certainly very like the human species, but much smaller, and Dr. Burmeister enumerates one

* Nouv. Dic. et Hist. Nat. vol. xv. p. 152.

Ped. Eurygaster, from the Simia *Sinica*, and other monkeys, which he thus describes: "Totus pallidus, segmentis abdominalibus haud bene terminatis, spiraculis segmenti quarti et quinti prominentibus fuscus. Long. 3."

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2. Pediculus Vestimenti. (Body Louse.)

Plate XXVI. Fig. 1.

Dirty white, immaculate, elongate ovate; head much produced, thorax contracted in front; abdomen with the segments indistinctly indicated.

Pediculus Vestimenti. Nitzsch. Ger. Mag. t. iii. p. 305. Burmeister, Handbuch. d. Ent. i. pt. 1. p. 60. Burmeis. Gen. Insect. Ord. Rhyn. No. 2.—Ped. humanus, var. 2. Linn. Syst. Nat. ii. p. 1016. Fabr. Syst. Ent. t. 4. p. 417. Fabr. Syst. Ant. 440. 75. i. Latr. Hist. Nat. d. Crust. et d. Inst. t. 8. p. 94. Latr. Gen. Crust. et Inst. i. 168. 2. Leach, Zool. Misc. iii. p. 66. 2. Edin. Ency. ix. p. 77. Samou. Ent. Comp. p. 142. i.—Pou humain de corps. De Geer. Mem. Inst. vii. p. 67. pl. 1. fig. 7.—Pou du corps. Lam. Animaux San Vert. 2nd edit. t. 5. p. 50. i.—Ped. humanus. Step. Cat. pt. ii. 329. i.

Wholly of a dirty white, chagreened with a few long stiff hairs scattered over the surface; head much produced, more elongate than the preceding species; occiput contracted; eyes large, prominent, black; antennæ long, slender, the second joint the longest (*a*); thorax broad, anterior part narrowed and rotundate, about the length of the head; abdomen very large, elongate, ovate, the margin slightly lobate, and the sutures of the segments very indistinctly defined; legs long, slender; the posterior femur enlarged, somewhat angular (*b*). Length ♂ $1\frac{1}{4}$. ♀ $1\frac{3}{4}$.

This species, commonly known as the Body Louse, is not by any means of such frequent occurrence as the preceding

species, and is readily distinguished from the former by its whiter colour and generally larger size. Although the Ped. *Capitis*, as I have stated, will spread over the body, I have never seen or heard of the *Vestimenti* being found any where but on the body,—of course I include the linen in contact with the same. The sudden appearance of these creatures in vast numbers, in places where they were not known before, and upon individuals previously free from such companions, is a circumstance not easy to account for; nor have I ever heard a plausible solution of the problem. This, like many other occurrences, has been viewed by the superstitious, and is still, as the prognostication of some impending evil, as sickness or misfortune, &c. to the individuals so visited. Without endeavouring to clear up the mystery, I can only bear testimony to the fact of their sudden occurrence, having known an instance where this species appeared in such quantities that it was necessary to cleanse the bed-linen twice a day for several days, at each of which visitations there appeared no visible decrease in their numbers, though at last they as suddenly disappeared. A late medical friend of mine* held the opinion that the Pediculi migrate, and stated to me the following fact in confirmation of his belief. "His father, who was also a medical practitioner in the West Riding of Yorkshire for fifty years, had frequently in the course of his practice to enter the cottages of the poor in his neighbourhood, (*i. e.* colliers and cloth-weavers); on one occasion, having a case which required his attendance near the bed for about half an hour, he found himself on his return home literally swarming with these gentry, both his coat and waistcoat and beneath the collar of the former; to use his own words, "you might have actually scooped them out with a tea-

* Mr. Swinden of Morley, near Leeds.

spoon." Now whether this was owing to his coming in contact with a legion on its march, or whether it might not be that a fresh subject has attractions for such puny persecutors, is a question for the decision of competent judges; of one thing however we are certain, that this locality was well stocked with this peculiar species of game. The lower classes in Spain and Portugal, are said to be much infested with Lice, but whether under this generic name we are to understand the *Capitis*, or *Vestimenti* or both, I have never ascertained. Though it would appear most probable the latter is the case, as they are generally the companions of disease, poverty, and filth. These creatures however are not regarded as unwelcome visitors by all nations, since we are told that the Hottentots and other nations of Western Africa, as well as some of the American Tribes eat them, and are so well pleased with their dainty morsel that they not only collect them themselves, but employ their wives in the chase,* and have thence been called Phthirophagi; Dr. Richardson informs me that during the overland expedition under Sir J. Franklin, he "daily observed the Indian women cracking their parasites between their teeth with much apparent enjoyment." Monkeys have the same propensity. It is stated,† that in India, however dirty the parties may be, lice are never found, except in the head, which, if correct, is a singular circumstance.

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3 Pediculus Tabescentium. (Distemper Louse.)

Pale yellow; head rotundate; antennæ long; thorax large and quadrate; abdomen large, the segments intimately united.

* Kirby and Spence, vol. i. p. 311.

† Griffith's Animal Kingdom, vol. xiv. p. 150. 163.

Pediculus tabescentium. Burmeister Handbuch I. pt. 1. p. 60. Genera Insectorum. Ord. Rhyn. sp. 3. Alt. dissert. de Phthiriasi, *Bonn*, 1824, 4. t. adj. fig. 4. Goldfuss. Zoologis, Atlas, vol. iii. p. 45. 3. tab. 213. fig. 5.

I have introduced this species in the list of indigenous Pediculi from a supposition, that it has been confounded with the preceding species, not from any actual knowledge of its occurrence. But as it is described as producing the louse distemper, or Phthiriasis, there is every probability of its infesting Great Britain, as well as Germany. In the dissertation referred to, a case is described of an old woman, 70 years of age, labouring under this disease; she was formerly healthy, though afflicted with the gout from the age of 60. She was infected for four months, at first only at night, and especially when in bed; she suffered from an unbearable itching of the skin, which in her case from age, poverty, and unwholesome diet, was wrinkled, flaccid, rough, and partially discoloured, and covered with small scales or scurf, under which the lice appeared to reside. These occurred most on the breast, neck, and back; they were quiet and disappeared, when the body was kept cool. Bedfellows were not infected, a rubbing with oil of turpentine cured the patient.

No writer perhaps ever carried his researches on the habits of the louse to a greater height than Leeuwenhoek, who allowed his zeal for science to overcome the disgust, which such creatures generally produce. In describing its mode of taking food, &c. he observes, "In my experiments and observations on this creature, although I had at several times had a number of them on my hand drawing the blood, yet I very rarely felt any pain from their punctures, which is not to be wondered at, when we consider the excessive slenderness of the piercer, for upon comparing this with a hair taken from the back of my hand, I judged

from the most accurate computation I could form by the microscope, that the hair was seven hundred times the size of this incredibly slender piercer, which consequently by its punctures must excite little or no pain, unless it happens to touch a nerve. Hence I have been induced to think that the pain or uneasiness those persons suffer who are infested by these creatures, is not so much produced from the piercer as from a real sting, which the male louse carries in the hind part of his body.* This sting is the louse's weapon of offence, and which it uses when pressed by the clothes, or otherwise disturbed. For I have observed that when roughly handled they protrude their sting as preparing to strike. Upon exhibiting this creature before the microscope to a certain great personage, he observed to me that his soldiers who were infested with lice, found them more troublesome in rainy than in dry weather, for which I gave this reason, that the clothes when wetted shrink or compress the body, so closely as to impede the louse in its motions, and cause it to use the sting, whereas in dry weather the clothes hanging loose on the body, the louse has room to insert its piercer and suck its food, which it cannot do without bending its body and raising its hind parts."

In order to ascertain the rapidity with which a louse can propagate its species, he tried the following experiment, which I shall also give in his own words. "The louse is so prolific an animal, that it is a common vulgar saying, that it will be a grandfather in the space of twenty-four hours.

* Dr. Burmeister states that this projecting organ is nothing more than the extremity of the penis. I examined a male louse, which I may observe is much more scarce than the female: and could perceive nothing but the penis, which when protruded is half as long as the body, and sub-conical. I do not however attempt to deny the power the animal may possess of using his organ as a weapon of defence.

This I could never believe to be the fact, but rather that it would require nearly a month, for the offspring of a louse to be capable of producing young of its kind; and in order to make proof of it by experiment, I at first proposed to hire some poor child to wear a clean stocking for a week, with two or three female lice in it, and well tied or secured at the garter, in order to see how many young ones would be produced in that space of time, but I afterwards considered that I could make the experiment with much more certainty in my own person, at the expense only of enduring in one leg, what most poor people are obliged to suffer in their whole bodies, during all their lives. Hereupon I put on one leg, instead of a white under stocking I usually wear, a fine black stocking, choosing that colour, because I considered that the eggs, and the young lice thence proceeding, would be more easily distinguished upon it. Into this stocking I put two large female lice, and cutting another black stocking into long slips, I bound it over the first above the knee, to prevent their escaping; after wearing this stocking six days I took it off, and found one of the lice had laid fifty eggs, and the other about forty. I opened the one which had laid the fifty eggs, and found in its body at least fifty more, and who knows how many eggs it had laid before I put it into the stocking, and how many more eggs it might then have in its body which my sight could not reach. Having worn the stocking ten days longer, I found in it at least 25 lice of three different sizes, some of which I judged were two days old, others a day old, and the rest newly come out of the egg. To give a clearer conception of the great increase of these animals, let us suppose a person to have about his body two male lice and as many females, and that the females in 12 days time lay 200 eggs; and that six days afterwards out of these eggs are produced

an hundred males and as many females, and that this young brood in 18 days' time are grown to a size to propagate their kind, and that each of those young females in the space of 12 days more lays an hundred eggs, and from which in six days time other young lice are produced; upon this supposition the number of lice springing from two females will amount to ten thousand. Thus it appears that two females may in eight weeks time be grandmothers, and see 10,000 lice of their own offspring, which unless reduced to actualdemonstration would seem incredible; and who can tell whether in the heat of summer these creatures may not breed in half the time I have mentioned."—*Hoole's Leeuwenhoek*, II. pp. 164 to 169.

The precise use of these creatures in the economy of the universe is not very easy to define, and although I cannot go so far as with Linnè to give the louse full credit of preserving full-fed boys from coughs, epilepsy, &c. yet I do think it probable they may be conducive to health, in a certain degree, by promoting cleanliness; for were it not for the great increase which soon takes place, if a colony are allowed undisturbed possession, there are individuals, probably, who are so lost to all sense of decency, that they would never clean themselves at all. But by means of this peculiar stimulus, it becomes absolutely necessary to have a battu now and then, in order to prevent a redundance of the population, and in this view I am not alone, for Serenus says,

> " See Nature kindly provident ordain
> Her gentle stimulants to harmless pain,
> Lest man, the slave of rest, should waste away,
> In torpid slumber life's important day."

Therefore, however disgusting and loathsome these insects may be to one portion of mankind, we must not on that

account consider them as evils, while they are beneficial to another class. For "God, in all the evil which he permits to take place, whether spiritual, moral, or natural, has the ultimate good of his creatures in view; the evil that we suffer is often a counter check which restrains us from greater evil, or a spur to stimulate us to good. We should therefore consider every thing, not according to the present sensations of pain, or the present loss or injury that it occasions, but according to its more general, remote, and permanent effects and bearings: whether by it we are not impelled to the practice of many virtues which otherwise might lie dormant in us, whether our moral habits are not improved, whether we are not rendered by it more prudent, cautious, and wary, more watchful to prevent evil, more ingenious and skilful to remedy it, and whether our higher faculties are not brought more into play, and our mental powers more invigorated by the meditation and experiments necessary to secure ourselves. Viewed in these lights, what was at first regarded as wholly made up of evil, may be discovered to contain a considerable proportion of good."

Genus III. HÆMATOPINUS.

Leach, Samouelle, Stephens, Burmeister. *Pediculus*, Linnæus, De Geer, Fabricius, Redi, Albin, Latreille, Nitzsch, Lamarck.

GENERIC CHARACTER.

Head variable in form, either globose, elliptical or lyrate; the anterior part truncate, rotundate or acute; occiput either truncate, rotundate or acuminate; either closely inserted into the thorax, and equal in width, or considerably produced, exerted, and much narrower.

Haustellum in structure like Pediculus, but always more produced, and protected on each side with stiff unciform bristles.

Antennæ of five joints, the first much enlarged, the second generally the longest, the third and fourth cylindrical or transverse and nearly equal, the fifth generally the smallest, conical, and terminated by a fasciculus of bristles.

Eyes generally small and flat, sometimes inconspicuous or probably absent, especially in the species infesting the Rodentia.

Thorax distinctly separated from the abdomen, and much narrower; the segments intimately united, generally transverse, shorter and broader than the head; the anterior part concave or notched, with a single spiracle between the first and second pair of legs.

Abdomen large, depressed, oval, ovate, or elliptical, of eight or nine segments; the sutures distinctly defined, the lateral margin reflexed, dentate or entire, surface papillose or smooth, and shining.

Legs formed for climbing, very thick, all nearly equal, in other respects like those of Pediculus.

Stirps I Abdomen with eight segments.

1. Hæmatopinus Acanthopus. (Louse of the Field Campagnol.)

Plate XXIV. Fig 3.

Pale yellow; head and thorax light ferruginous; abdomen with the lateral margin ferruginous, reflexed and spinulose; apex of the posterior femur armed with a strong tooth.

Pediculus acanthopus, Burmeister Genera Insectorum. Order, Rhyn. sp. 5. tab. Gen. Phthirius, fig. 2.

Pale yellow, shining and smooth, with a few hairs scattered over the surface; head ferruginous, subcordate, obtuse in front, the lateral margin deeply sinuated behind the antennæ; occiput acuminate; eyes not visible; antennæ short and thick, the first joint very large, the second much the largest. Thorax ferruginous about the length of the head and subquadrate, depressed in the centre, lateral margins elevated, anterior part notched to receive the occiput, base slightly produced; abdomen large, elongate, ovate, the lateral margin of the first six segments pale ferruginous, reflexed, obliquely truncate and terminating in a spine; legs thick, the four anterior pale yellow, the two posterior ferruginous, having the coxæ armed with two minute teeth on the inner side, the femur terminating at the superior extremity, with a strong recurved tooth; tibia clavate; tarsus very large; unguis slender and acute. Length $\frac{1}{2}$.

The first example of this species which came under my notice was communicated by the Rev. L. Jenyns, from the

Field Campagnol, (Arvicola Agrestis). From which animal I have also taken it myself, as well as from the Dormouse. Mr. Thompson also sent another specimen taken from a new species of Arvicola near Belfast. It appears however to be by no means of frequent occurrence.

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2. Hæmatopinus Spinulosus. (Louse of the Rat.)

Plate XXIV. Fig. 5.

Pale fulvous yellow, spinulose; occiput broad, nearly obtuse; abdomen with the lateral margin of the first six segments terminating with a tooth; posterior pair of legs very large and thick.

Pediculus spinulosus. Burmeister Genera Insectorum, Order Rhynchota, sp. 8.

Pale fulvous yellow, thickly spinulose. Head large, sinuated on the sides, somewhat quadrate, the anterior part convex, with two depressed lines extending to the occiput which is nearly obtuse, with a slight prolongation in the centre. Eyes not visible; antennæ about the length of the head, very thick; the first joint largest, second, third and fourth nearly equal, fifth smallest and conical; thorax shorter than the head, transverse, lateral margin prominent, basal angles acute; abdomen large, broad, obovate, segments equal, the lateral margins of the first six ferruginous, terminating in a strong tooth, beneath which rises a long bristle, last segment terminated with two tufts of hairs; legs thick, the anterior pair short, posterior very large; tarsi rather small; ungues thick and ferruginous. Length $\frac{1}{3}$.

Infests the common rat (Mus decumanus) from which I obtained a few specimens.

3. Hæmatopinus Spiniger. (Louse of the Water Campagnol.)

Plate XXIV. Fig. 6.

Head elongate; occiput acute; abdomen ovate, with the lateral margin of the first six segments terminating in a strong tooth; legs thick and nearly equal.

Pediculus spiniger. Burmeister Genera Insectorum, Ord. Rhyn. sp. 9. plate, Gen. Phthirius, fig 5.

Pale tawny yellow; head ferruginous, elongate; occiput acute; eyes small, situated at basal angles; antennæ very thick, shorter than the head and inserted in a sinus on the anterior margin; thorax ferruginous, about half the length of the head, transverse, anteriorly with a deep sinus, posteriorly concave truncate; abdomen oblong ovate, the lateral margin of the first six segments terminating posteriorly in a sharp tooth; the sutures well defined and spinulose; apex and sides ferruginous; legs thick; femur short; tibia very large with two teeth at the apical extremity; ungues ferruginous and strong. Length $\frac{1}{3}$.

First communicated by the Rev. L. Jenyns.

Stirps II. Abdomen with nine segments.

4. Hæmatopinus Lyriocephalus. (Louse of the Hare.)

Plate XXIV. Fig. 4.

Testaceous; abdomen greyish yellow: head lyrate, front acute; occiput acuminate; antennæ sub-clavate; legs rather slender.

Pediculus Lyriocephalus. Burmeister Gen. Insect. Order Rhyn. sp. 11.

Elongate, testaceous, hairy; head lyrate, front acute; occiput acuminate, with two longitudinal impressed lines,

lateral margin sinuated before the eyes; antennæ about half the length of the head, sub-clavate, last joint small and conical; eyes flat and obscure; thorax short, transverse, sides rotundate, base concave truncate, anterior notched; abdomen large, oblong, oval, inflated, grayish yellow, chagreened, last segment very small; legs light, testaceous, anterior pair the thickest; femur robust; tibia abruptly clavate, terminating anteriorly with two teeth and a fleshy pulvillus; tarsus slender and conical; ungues long, slender and curved. Length $\frac{3}{4}$.

This species I have obtained only once, though I have examined several hares at different seasons. It nevertheless may be owing to the Suctorious species of this order, leaving the body soon after death, while the Biting or Mallophagus division, whose food consists of the delicate fibres of feathers and hairs, or particles of epidermis, will remain many days or even weeks, the animal fluids or warmth of the body not being essential to their existence.

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a. Head short and broad, about the length of the thorax.

5. Hæmatopinus Piliferous. (Louse of the Dog.)

Plate XXV. Fig. 4.

Testaceous; abdomen cadaverous, thickly covered with pale fuscous hairs.

Pediculus piliferous. Burmeister Gen. Insect. Ord. Rhyn. sp. 13.—Pediculus canis-familiaris, Mull. prodr. 2182?—Fabr. Faun. Grœnl. p. 215, no. 183?.

Head and thorax testaceous, the former short, broad, and obtusely hexangular; anterior part slightly lobate, with a fur row down each side, about half way above the antennæ, and two small foveolæ in the centre; labium produced; haustellum broad; occiput acuminate; eyes very small, black and

near the base; antennæ long, thick, situated in a concavity of the lateral margin, the first and second joints very thick, the remainder gradually smaller; thorax sub-conical, rather shorter than the head, the segments obscurely defined, centre slightly channelled, basal angles produced; abdomen large, ovate, ashy flesh-colour, but variable in tint, chagreened, very hairy; intestine dull red and distinct; legs dull chestnut, long and stout; tibia very large, internally clavate, and terminating in a strong tooth; tarsus conical; ungues slender and curved. Length 1 to $1\frac{1}{4}$.

I suspect this species to be the *piliferous* of Dr. Burmeister. I have found it upon dogs two or three times, but it is by no means of common occurrence. I also received some specimens from the Ferret, (Mustela furo). It is rather variable in colour, for while some are of a dull ashy flesh colour, others have the whole abdomen tinged of a fine red, and this more especially when the Insect is gorged with blood.

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6. Hæmatopinus Eurysternus. (Louse of the Ox.)

Plate XXV. Fig. 5.

Chestnut and shining; head sub-triangular; occiput rotundate; thorax transverse, quadrate; abdomen large, ovate, ashy white; spiraculi prominent and fuscus.

Hæmatopinus eurysternus. Stephens Cata. pt. ii. p. 329. Pedi Eurysternus, Nitzsch. Germ. Mag. vol. iii. p. 305. Burmeister Gen. Insect. Ord. Rhyn. sp. 14.

Head chestnut, sub-triangular, anterior part transversely and finely rugulose; occiput rotundate; eyes moderate, pale fuscus, situated on a projection of the temporal margin at about one-third from the base; antennæ cylindrical, pale, ochraceous and slender; thorax dull chestnut, subquadrate,

convex, nearly twice the width of the head, concavo-truncate before and behind, with a deep oblong diagonal furrow on each side, in front of the spiraculum, basal margin much depressed; abdomen large ovate, grayish white, or ochraceous gray, shining and smooth, with four longitudinal rows of fuscus horny excrescences, the lateral ones surrounding the spiracula; sutures well defined and hairy, the last segment with two uncinate black marks; legs chestnut, very long and thick, especially the four anterior; tibia acutely toothed; tarsus very large; ungues strong and black at the extremity. Length 1 to $1\frac{1}{2}$.

Very common on Oxen, especially the mane and shoulders, where these animals are frequently observed to be devoid of hair, which has been rubbed off in order to rid themselves from the irritation caused by numbers of these insects which are there congregated. The young are much more agile than the mature insect, and differ in nothing except a want of proportion, the limbs being much thicker as compared with the bulk of the body, than when adult. Length 1 to $1\frac{1}{4}$.

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7. Hæmatopinus Ventricosus.—*Denny.* (Louse of the Rabbit.)

Plate XXV. Fig. 6.

Dull chestnut; head sub-lyrate; abdomen large, inflated, cadaverous white; tarsi chestnut.

Head large, sub-lyrate; occiput very broad, rotundate; eyes small, flat, seated upon a temporal projection near the base, with a few stiff hairs in front; antennæ long, the first joint broad and much the largest, second cylindrical, the remainder nearly equal; thorax very short, transverse, narrower before than behind, channelled in the centre, base

obtusely angular; abdomen very large, oval, apparently inflated, chagreened and hairy; cadaverous white; legs pale ochraceous, short and thick; tarsus small; ungues chestnut, very robust and obtuse. Length $\frac{1}{3}$ to $\frac{1}{2}$.

The first specimen of this insect which came under my notice was in the collection of the Rev. L. Jenyns, since which I have detected several upon Rabbits. This species varies in colour, but this will depend in a great measure upon whether the insect has just gorged itself with fresh blood, when the abdomen will have a much redder hue. In its motions it is very sluggish, and resembled, from the peculiar inflated and cushion like appearance of its abdomen, the females of Orgyia, antiqua and gonostigma; hence I have named it *Ventricosus*.

β. Head elongate, narrow, longer than the thorax.

8. Hæmatopinus Vituli. (Louse of the Calf.)

Plate XXV. Fig. 3.

Chestnut; head sub-lyrate; abdomen long, and sub-cylindrical, ashy white; legs very thick.

Hæmatopinus Vituli, Steph. Cat. pt. ii. p. 329.—Pediculus Vituli, Linn. Syst. Nat. ii. 1018. Faun. Suec. 1947. Fabr. Syst. Ent. 805. 7. Syst. Inst. ii. 478. 8. Berk. Synop. i. p. 170. Stew. Elem. ii. p. 279. Turt. iii. p. 696.—Pediculus tenuirostris, Burmeister Gen. Insect. Order, Rhyn. sp. 17.

Chestnut and shining; head sub-lyrate, with a broad longitudinal depression down the centre, and a depressed line on each side before the eyes; occiput acuminate; eyes flat, pale, fuscus; antennæ about half the length of the head, cylindrical, the first and second joints the largest, placed in a slight sinus before the eyes; thorax cylindrical, shorter than the head, channelled down the centre, the segments

obscurely defined, anteriorly and posteriorly notched; abdomen very long, sub-cylindrical, grayish white, segments well defined, the 2nd to the 7th with two rows of oblong, fuscus, horny excrescences encircling the spiraculæ; sutures hairy, the terminal one with a triangular black spot on each side the apex; legs very thick; tibia short, with a large obtuse apical tooth; tarsus short, conical; ungues very thick and obtuse. Length 1 to $1\frac{1}{4}$.

The only two examples of this species which I have examined were kindly forwarded to me by Rev. L. Jenyns, who found them upon a calf. Mr. J. named them *Vituli*, and I have no doubt they are the species so named by Linnæus and Fabricius. It may appear somewhat strange that a young animal should have a distinct species of parasite, which is not found upon its parents; but, as far as we are able to judge, such is the fact. I have examined numbers of the lice from oxen, but never detected a single specimen of this species amongst them, though there were of *Trichodectes Scalaris*, which lives upon cattle, and in society with the H. *Eurysternus*. In describing and figuring this species, I have doubts as to my accuracy, in consequence of all specimens of Pediculi (proper) altering colour and form after death; and as I have never seen this insect alive, I will not vouch for the exactness of either of these points.

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9. Hæmatopinus Asini. (Louse of the Ass.)

Plate XXV. Fig. 1.

Ferruginous; abdomen large, light tawny-yellow white, with horny excrescences on each side, surrounding the spiraculæ; head very long, deeply sinuated behind the antennæ.

Hæmatopinus Asini. Steph. Cat. pt. ii. p. 329.—Pediculus Asini, Linn. Syst. Nat. ii. p. 1018, 12. Fabr. Spec. Insect. ii. 478, 10. Syst. Ent. 806. 9. Turt. iii. 695. Albins Aran. 76. tab. 51. Redi Expe. tab. xxii. fig. 1. Opera, tab. xxv. Pediculus macrocephalus. Burmeister Gen. Insect. Ord. Rhyn. spe. 18 ?

Ferruginous yellow; head very long, narrow, anteriorly, with two black patches on each side near the apex; temporal region broad, and much produced on each lateral margin; occiput contracted and lengthened; antennæ short, cylindrical joints nearly equal; eyes very small and black, seated in a deep sinus behind the antennæ; thorax much wider than the head, transverse; anterior margin retuse; posterior truncate, with the angles acute; abdomen large ovate, twice the width of the thorax, pale yellow-white transversely rugulose and hairy, with a fuscus horny excrescence surrounding each spiracula, the last segment with a large angular black spot on each side; legs short, thick, and hairy; tibia and femur nearly equal; tarsus large, conical; ungues long and slender. Length 1 to $1\frac{3}{4}$.

This species is common upon the Ass, frequenting the mane and back. I have also received specimens from the Horse, from which circumstance I suspect it is the species described by Dr. Burmeister under the name of *Macrocephalus;* it is most certainly the insect figured by *Redi*. In a list of the species in the British Museum, communicated by J. G. Children, Esq. I find a MS. name of *Caballi*. This I also suspect to be identical, from the fact of the *Asini* not being enumerated, and which, from its common occurrence, could not have escaped Dr. Leach's observation. In colour this species is rather variable in intensity, those having the abdomen nearly white is owing to their having but recently emerged from the egg, or cast their skin.

10. Hæmatopinus Suis. (Louse of the Swine.)

Plate XXV. Fig. 2.

Dusky ferruginous; abdomen grey or ashy-yellow; flat and membranaceous, with a black horny excrescence surrounding each spiracula, which is white; legs long, thick; femur banded; tibia very abruptly clavate, dark at the apex.

Hæmatopinus Suis. Leach. Zool. Misc. iii. p. 65. pl. 146. Edin. Ency. ix. 77. Ency. Brit. Supp. i. 24. Samou. Ent. Comp. p. 143. Step. Cat. pt. ii. p. 329.—Pediculus Suis. Linn. Syst. Nat. ii. p. 1017. Panz. Faun. li. pl. 16. Stew. Elem. ii. p. 298. Wood, ii. p. 123. pl. 76. —Pediculus Urius. Nitzsch. Germ. Mag. iii. p. 305. Burmeister's Gen. Insect. Ord. Rhyn. Spe. 19.

Ferruginous; head somewhat pyriform and narrow, with an angular black line at the apex, and one on each side before the eyes; haustellum very prominent and conical (*e*); eyes large, flat, ashy blue, seated about the centre of the lateral margin; antennæ filiform, slender, half the length of the head, pale ochraceous yellow; the base of each joint fuscus; thorax transverse, much wider than the head, with a strong elevated margin, anteriorly concave truncate, light ochraceous and wrinkled, posterior angles acute, lateral portion and base pitchy; abdomen large, flat, oval, and membranaceous, bluish or yellowish ash colour, sometimes nearly white, the segments well defined, with a few hairs scattered over the surface, the second and five following segments with a black horny excrescence on each side surrounding the spiracula, which is white, penultimate segment with two triangular black spots; legs pale, ochraceous, long and thick; femur nearly cylindrical, with several dark bands; tibia very abruptly clavate, with a blackish extremity; tarsus long and cylindrical, with a

large fleshy pulvillus; unguis very long, curved, slender, and pitchy. Length $1\frac{1}{4}$ to $1\frac{3}{4}$.

This species is found in great numbers on Swine, but it does not appear so generally spread as might be expected from the dirty habits of the animals. It most frequently occurs on those fresh imported from the Sister Isle. It was many months before I could obtain a single example. I had applied to both farmers and pig butchers, neither of whom seemed to approve of the idea which I had conceived, of *their* pigs being *lousy*, but referred me to those of the Emerald Isle as being sure to gratify my wishes—(forgetting, I suspect, that the Irish pigs come to this market to meet English buyers). I accordingly visited a colony just arrived, where I most certainly met with a ready supply—but here they were confined almost entirely to lean animals, and wherever I found a pig fat or healthy no game were to be seen. In walking this species uses the claw and tibial tooth with great facility (which act as finger and thumb), in taking hold of a single hair; the male is much smaller, with the abdomen shorter, sub-orbicular, and the segments lobate; the Egg or Nit is $\frac{3}{4}$ of a line in length, of a cream colour, and elegantly chagreened, oblong and slightly acuminated, surrounded by a lid, which, when the young insect is ready to emerge, splits circularly, or as a Botanist would say, has a circumcisile dehiscence.

In addition to the above the following species enumerated by different authors, have been detected on the continent of Europe, and as the animals of which they are the parasites are also indigenous to Great Britain, it is most probable they will eventually be added to our Fauna. To obtain these I have used every exertion without success;

as however this work would be imperfect without some notice of them, I therefore append their specific characters from Dr. Burmeister's Genera Insectorum.

1. *Hæmatopinus sphærocephalus.* (Louse of the Squirrel.) Capite orbiculari; pallidus; segmentis abdominalibus quinque anticis dente recto armatis. Long. $\frac{1}{3}$. Habitat in Sciuro vulgari.

2. *Hæmatopinus serratus.* (Louse of the Common Mouse.) Capite breviori, genis post antennas incrassatis; lividus, abdomine in basi angusto, segmentis utrinque dilatatis, marginem abdominis serratum referentibus.—Long. $\frac{1}{3}$. Habitat in Mure musculo.

3. *Hæmatopinus affinis.* (Louse of the Field Mouse.) Pallidus, sincipite parabolico genis post antennas incrassatis; thorace rhombeo. Long. $\frac{1}{3}$. Habitat in Mure agrario et sylvatico.

4. *Hæmatopinus setosus.* (Louse of the Harp Seal.)* Fuscus; undique fusco setosus. Pediculus Phocæ. Lucas in Guer. Mag. de Zool. iv. c. 9. p. 121. Habitat in Phoca groenlandica.

5. *Hæmatopinus crassicornis.* (Louse of the Red Deer.) Capite majori cum thorace angustiori pedibusque testaceo; abdomine albido; spiraculis non prominentibus. Long. $\frac{2}{3}$. Redi Exp. tab. 23. fig. sup. Hab. in Cervo Elapho.

6. *Hæmatopinus stenopsis.* (Louse of the Goat.) Testaceus unicolor; abdomine elongato ovali, pilis longis sparsis obsesso. Long. 1.

* I am indebted to the kindness of Robert Ball, Esq. of Dublin, who, with a view of assisting me with the parasites of our Mammalia, forwarded some, which were found by Dr. Bellingham in the posterior nares of a specimen of Halichærus Gryphus. These, however, were not the Hæmatopinus setosus, but belonging to another class, ACARI.

FAMILY II.

PHILOPTERIDÆ.

"It is one material use of the Study of Nature, to illustrate this greatest of all truths:—That there must be a God: that he must be Almighty, Omniscient, and Infinite in Goodness; and that although he dwells in a light, inaccessible to any mortal eye, yet our faculties see and distinguish him clearly in his works."—PONTOPPIDAN, Pref. p. 1.

"The works of the Lord are great, and sought out of all them that have pleasure therein."—PSALMIST.

" The Almighty Creator, when he clothed the world that he had made with plants, and peopled it with *animals*, besides the manifestation of his own glory, appears to have had *two* most important purposes in view ;— the one to provide a supply for the mutual wants of the various living objects he had created, for the continuance of the species, and for the maintenance of a due proportion, as to numbers, of each kind, so that all might subserve to the good of the whole; and the other, that by them he might *instruct* his creature man in such civil, physical, moral, and spiritual truths, as were calculated to fit him for his station in the visible world; and gradually prepare him to become an inhabitant of that invisible one for which he was destined."—KIRBY.

FAMILY II.

PHILOPTERIDÆ. (Burmeister.)

Orthoptera epizoica (*Nitzsch*). Nirmidæ (*Leach.*)

ESSENTIAL CHARACTER.

Antennæ filiform, with three or five joints; maxillary palpi, none; mouth with strong mandibles.

NATURAL CHARACTER.

Mouth beneath; maxillæ none; mandibulæ nearly concealed by the labium; pro-thorax narrower than the head; meso-thorax none, or hid by the meta-thorax, which is very large; abdomen with nine segments; œsophagus long, unilateral, ending somewhat acutely in the cæcum; biliary vessels four, free, equal, without any particular enlargement. Males with two testicles on each side; females with five ovaries on each side the uterus. Coitus exercetur mare feminæ submisso hujusque pedes tertios tenente antennis, si hae sunt cheliformes. Metamorphosis indistinct, perhaps none?

ARTIFICIAL DIVISIONS OF THE FAMILY.

PHILOPTERIDÆ.

- I. Antennæ five-jointed; tarsi with two claws; *parasitic* upon birds..... — Genus: I. PHILOPTERUS.
  - Sub-Genus: I. Docophorus.
  - Sub-Genus: II. Nirmus.
  - Sub-Genus: III. Goniocotes.
  - Sub-Genus: IV. Goniodes.
  - Sub-Genus: V. Lipeurus.
  - Sub-Genus: VI. Ornithobius.
- II. Antennæ three-jointed; tarsi with one claw; *parasitic* upon quadrupeds.... — Genus: II. TRICHODECTES.

SYNOPSIS SPECIERUM.

PHILOPTERIDÆ.

Genus I. PHILOPTERUS.

Sub-Genus I. DOCOPHORUS.

* Metathorace postice in angulum finito, trabeculis magnis et distinctis, lineis capitis nigris diagonicis duabus.

1. Atratus. D. Lacteus, nitidus, pilosus; abdomine ovato cum maculis lateralibus-triangularibus, flavis, fuscis, nigre marginatis; femore et tibiis nigre fasciatis. Long 1. Hab. Corvus frugilegus.

2. Ocellatus. D. Lacteus, nitidus, pilosus; capite elongato, triangulari; fasciis lateralibus abdominis nigris, turbinatis quarum singulæ maculam albam magnam mediam ostendunt; femore et tibiis annulis nigris exhibentibus. Long. 1. Hab. Corvus cornix. v. Corvus corone.

4. Semisignatus. D. Lacteus, nitidus, pubescens; capite magno, latissimo, subcordato, incolorate depresso antices; segmentis abdominis septem prioribus fascia nigra conica utrinque impressis; femore duabus fasciis nigris distincto. Long. 1. Hab. Corvus corax.

4. Picæ. D. Capite et thorace nubilo-castaneis, nitidis margine nigro thoracem cingente; abdomine pallide flavo, albo; fasciis lateralibus piceis; femore nigris annulis distincto. Long. $\frac{3}{4}$. Hab. Pica caudata.

4. Guttatus. D. Lacteus: fasciis lateralibus abdominis

piceo-nigris, quorum sex priores maculam albam, rotundam, mediam habent. Long. $\frac{3}{4}$. Hab. Corvus monedula.

6. Crassipes. D. Capite nubilo-castaneo, subtriangulari; ante oculos valde sinuato; abdomine ovato, lacteo cum fasciis lateralibus piceis; pedibus valde crassis. Long. 1. Hab. Nucifraga caryocatactes.

7. Superciliosus. D. Splendide castaneus; capite subtriangulari, utrinque sinuato; margine laterali abdominis apicem versus serrato. Long. $\frac{3}{4}$. Hab. Picus major.

8. Communis. D. Castaneus, nitidus cum albis pilis; capite elongato, triangulari, antice valde prolato; trabeculis maximis, curvatis; femore posteriore valde incrassato, inferne dentato. Long. $\frac{3}{4}$ Hab. Ord. Insessores.

9. Variabilis. D. Capite et thorace castaneis, nitidis, illo elongato, triangulari; abdomine ovato, lacteo cum fasciis jecinorei coloris. Long. $\frac{3}{4}$. Hab. Tringa variabilis.

10. Merguli. D. Gracilis, castaneus, lævis, nitidus; capite magno, conico cum fasciis duabus longitudinalibus, transversis, subangularibus; thorace multo quam caput minore, abdomine longo ovato. Long. $\frac{1}{2}$. Hab. Mergulus Alle.

11. Fulvus. D. Capite, thorace pedibusque fulvis, nitidis, pubescentibus; capite maximo, elongato, triangulari utrinque sinuato; trabeculis maximis; antennis subclavatis; fasciis lateralibus abdominis ferrugineis. Long. $\frac{3}{4}$. Hab. Garrulus glandarius.

12. Leontodon. D. Capite et thorace castaneis, nitidis illo antice valde prolato; fasciis abdominis elongatis, acutis cum multis pilis pallidis. Long. $\frac{3}{4}$. Hab. Sturnus vulgaris.

13. Ostralegi. D. Castaneus, flavis pilis nitidus; prothorace conico; fasciis abdominis lingulatis, acutis; trabeculis curvatis, acutis. Long. $\frac{3}{4}$. Hab. Hæmatopus Ostralegus.

14. Ralli. D. Nitido castaneus, flavus, lævis, splendens; capite magno, triangulari; pedibus valde crassis; abdomine obtuse ovato cum margine fulvo-pallido. Long. $\frac{1}{2}$. Hab. Rallus aquaticus.

15. Turdi. D. Capite et thorace castaneo flavis, illo oblongo, antice valde prolato, duabus fasciis latis distincto; abdomine fere orbiculari cum fasciis castaneis. Long. $\frac{1}{2}$. Hab. Turdus musicus.

16. Pastoris. D. Capite et thorace pallido-fulvis, illo acuminato cum fasciis duabus jecinoreis diagonicis; abdomine ovato, cum fasciis pallido fuscis, margine reflexo. Long. $\frac{3}{4}$. Hab. Pastor roseus.

17. Celidoxus. D. Capite et thorace castaneo-flavis, nitidis; clypeo prolato, sub marginato; fasciis abdominis, castaneis, acute triangularibus; suturis postice valde sinuatis. Long. $\frac{1}{2}$. Hab. Alca Torda.

18. Auratus. D. Capite et thorace fulvo-flavis, nitidis; clypeo arcto; abdomine pallido, fulvo-flavo, albo cum margine fusco, segmento ultimo castaneo, rotundo, splendente. Long. $\frac{1}{2}$. Hab Scolopax rusticola.

19. Fringillæ. D. Castaneo-flavus, nitidus, lævis; capite obtuse triangulari; abdomine ovato cum fasciis lateralibus brevibus, truncatis, confluentibus, pallido fuscis. Long. $\frac{3}{4}$. Hab Fringilla montana.

20. Colymbinus. H. Castaneus, nitidus; capite cum fasciis duabus lateralibus nigris semicircularibus; metathorace transverse ovato, postice subangulato; abdomine ovato, piceo. Long. 1. Hab. Colymbus glacialis, arcticus et septentrionalis.

21. Aquilinus. D. Nitido-castaneus, lævis, nitidus; capite magno, triangulari, antice valde prolato, edentato; abdomine lato, pallido flavo-albo: cum fasciis lateralibus

nitido-castaneis, acute cingularibus. Long. 1. Hab. Aquila Chrysaëtos et Albicilla.

** Metathorace postice in angulum finito, lineis capitis nigris diagonicis nullis.

22. Cephalus. D. Piceo-castaneus, nitidus, lævis; capite basim latissimo; abdomine lato, piceo, cum macula humerali et segmentis duob. ultimis ferrugineis. Long. $\frac{3}{4}$. Hab. Lestris parasiticus, et pomarinus.

23. Pallescens. D. Pallidus, ochraceo-flavus; capite magno, antice prolato; abdomine fere orbiculari, pilis denso, cum segmentis postice sinuatis. Long. $\frac{1}{2}$. Hab. Parus major et palustris.

24. Platygaster. D. Capite cordato, castaneo; abdomine latissimo, fere orbicularis plano, cum fasciis lateralibus intense jecinoreis, quarum singulæ duas foveolas habent. Long. $\frac{3}{4}$. Hab. Uria Troile.

25. Fusiformis. D. Capite et thorace nitido-castaneis, illo magno, elongato, sub cuneiformis; abdomine acute ovato, piceo-fusco. Long. $\frac{1}{2}$. Hab. Tringa minuta.

26. Canuti. D. Capite et thorace castaneis, illo longissimo, cuneiformi; abdomine ovali jecinoreo, cum segmentis emarginatis. Long. $\frac{1}{2}$. Hab. Tringa Canutus.

27. Cincli. D. Pallidus straminei coloris, pilosus; capite subcordato; metathorace magno, cum margine posteriore in cingulum producto; abdomine obovato. Long. $\frac{1}{3}$. Hab. Cinclus aquaticus.

28. Limosæ. D. Capite elongato, castaneo; thorace fulvo; fasciis abdominis piceo-nigris. Long. $\frac{3}{4}$. Hab. Limosa rufa, et melanura.

29. Megacephalus. D. Pallide fulvus; capite magno obcordato; abdomine flave albo. Long. $\frac{1}{4}$. Hab. Uria grylle.

30. Rostratus. D. Pallidus, castaneo-flavus; clypeo

elongato, prolato, arcto, truncato. Long. 1. Hab. Strix flammea.

31. Pari. D. Pallido-fulvus, nitidus, pilosus; abdomine marginem obscure castaneum et maculas piceas habente. Long. ¾. Hab. Genus Parus.

32. Humeralis. D. Capite magno, triangulari, splendide castaneo; abdomine flave albo, cum fasciis lateralibus piceo-nigris, acute angularibus quarum tres priores maculam humeralem castaneam habent. Long. 1. Hab. Numenius arquata.

33. Lari. D. Nitide castaneus, lævis, nitidus; fasciis, abdominis piceo-nigris, confluentibus. Long. ¾. Hab. Genus Larus.

34. Conicus. D. Pallide fulvo-flavus; capite magno, sub conico; abdomine elliptico. Long. ½. Hab. Charadrius pluvialis.

35. Serrilimbus. D. Pallide fulvo-flavus; capite elongato, triangulari, cum margine laterali nigro-fusco. Long. ¾. Hab. Yunx torquilla.

36. Reguli. D. Fulvo-flavus; capite triangulari; fasciis lateralibus abdominis nitide-fulvis in colorem piceo-castaneum, desinentibus. Long. ½. Hab. Regulus auro-capillus.

37. Upupæ. D. Elongatus, obscure castaneus, nitidus capite maculam lateralem nigram angularem ante oculos ostendentæ; foveis stigmaticis abdominis et suturis pallido-ochraceis. Long. 1. Hab. Upupa Epops.

*** Metathorace postice in semicirculum finito, vel abrupte truncato.

38. Ceblebrachys. D. Splendens, lævis; capite magno, cordato; nitide castaneo; abdomine albo, cum multis albis pilis, margine laterali fasciis transversis jecinoreis distincto. Long. 1. Hab. Surnia nyctea.

39. Platyrhynchus. D. Abdomine ovato, albo, margine pedibusque rubris. Hab. Accipiter palumbarius.

40. Cygni. D. Capite thorace pedibusque nitido-castaneis, lævibus, splendentibus; abdomine lato, ovato, albo, primo segmento maculaque humerali secundæ et tertiæ castaneis, reliquis fascias breves jecinoreas utrinque habentibus. Long. $\frac{1}{2}$. Hab. Cygnus Bewickii.

41. Testudinarius. D. Nitido-fulvus, nitidus, pubescens; centro et margine abdominis piceo-fulvis. Long. 1—$1\frac{1}{4}$. Hab. Numenius arquata.

42. Latifrons. D. Capite et thorace nitido-ferrugineis, illo antice latissimo, valde emarginato; abdomine oblongo, ovato, albo, cum fasciis nitido-ferrugineis in colorem intense castaneum vel jecinoreum, mutantibus. Long. $\frac{2}{3}$—1. Hab. Cuculus Canorus.

43. Fuscicollis. D. Capite et thorace obscure castaneis, lævibus, nitidis, illo obtuse triangulari, antice acuminate depresso; abdomine glauce albo, fasciis lateralibus jecinoreo-fuscis. Long. $\frac{3}{4}$. Hab. Lanius Excubitor.

44. Chrysophthalmi. D. Capite et thorace nitide castaneis, illo magno, cum duabus fasciis diagonalibus clavatis; abdomine lato, flave albo, fasciis lateralibus lingulatis, undulatis, nitide castaneis in colorem jecinoreum intus desinentibus; antennarum articulo secundo intus prolato. Long. 1. Hab. Clangula chrysophthalmos.

45. Plataleæ. D. Capite et thorace intense castaneis, illo lato cum fasciis duabus jecinoreis; abdomine fere orbiculari, cum fasciis jecinoreis elongatis. Long. $1\frac{1}{4}$. Hab. Platalea leucorodia.

46. Meropis. D. Ferrugineus, lævis, splendens; capite triangulari; clypeo valde emarginato; abdomine obscure albo. Long. $\frac{1}{2}$. Hab. Merops Apiaster.

47. Cursor. D. Nitide castaneo-fulvus cum multis

albis pilis; capite obtuse triangulari clypeo truncato; fasciis abdominis obtuse triangularibus. Long. $\frac{3}{4}$—1. Hab. Otus vulgaris.

48. Icterodes. D. Nitide ferrugineus; capite oblongo; clypeo lato, subtruncato; abdomine albo, fasciis lateralibus confluentibus, cum fuscæ macula. Long. $\frac{1}{2}$. Hab. genus Anas.

49. Thalassidromæ. D. Capite et thorace fulvo-flavis; fasciis abdominis intense piceo-nigris cum foveolis duabus magnis. Long. $\frac{3}{4}$. Hab. Thalassidroma pelagica.

50. Passerinus. D. Capite et thorace castaneo-flavis, illo parvo subpyriformi; abdomine acuminato, fasciis lateralibus intense castaneis. Long. $\frac{1}{2}$. Hab. Motacilla alba et flava.

51. Tricolor. D. Capite thorace pedibusque intense piceo-castaneis; abdomine albo, fasciis lateralibus intense jecinoreis. Long. $\frac{3}{4}$—1. Hab. Ciconia nigra.

52. Incompletus. D. Fulvo-flavus, nitidus, pubescens elongatus; marginibus abdominis laterali et suturali dense fulvis; unguibus castaneis. Long. $1\frac{1}{4}$. Hab. Ciconia alba.

53. Merulæ. D. Nitide castaneo-flavus; fasciis abdominis brevibus, pedibus crassis, margine superiore fusco. Long $\frac{3}{4}$. Hab. Turdus Merula.

54. Modularis. D. Pallide castaneo-flavus; capite magno, triangulari; thorace obscure castaneo, nigre emarginato; abdomine magno, fasciis transversis longis ligulatis truncatis. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Accentor modularis.

55. Rubeculæ. D. Elongatus; capite et thorace castaneo-flavis, hujus margine intense jecinoreo; fasciis abdominis, intense castaneis, brevibus, subtruncatis; articulis antennarum tribus ultimis castaneis. Long. $\frac{3}{4}$. Hab. Sylvia Rubecula.

56. Platystomus. D. Nitide castaneus; capite magno;

clypeo lato, profunde emarginato; fasciis abdominis acutis, castaneis, apicibus fulvis. Long. 1. Hab. Buteo vulgaris.

57. Nisi. D. Nitide fulvo-flavus; clypeo arcto profunde emarginato; fasciis abdominis nitido-fulvis, longis, acutis. Long. ¾. Hab. Accipiter nisus.

58. Bassanæ. D. Elongatus, intense castaneus; abdomine pallide fulvo, fasciis lateralibus intense jecinoreis, confluentibus. Long. ¾—1. Hab. Sula Bassana.

59. Alcedinis. D. Pallide fulvo-flavus; capite magno, acuminato; abdomine oblongo-ovato. Long. ¾. Hab. Alcedo Ispida.

Sub-Genus II. NIRMUS.

* Capite rotundato et cordato.

1. Cameratus. N. Fusco-castaneus, pilosus, capite brevi cordato, abdomine subovato, cum fasciis disco et marginalibus, suturalibus, pallidis flavo-albis. Long. ¾. Hab. Tetrao Scoticus.

2. Discocephalus. N. Læte fulvus, capite sub-orbiculari, cum maculo laterali, castaneo, ante antennis, et fasciis abdominalibus transversus. Long. ¾. Hab. Aquila albicilla.

3. Turmalis. N. Castaneus, nitidus capite cordato, abdomine elliptico, cum fasciis dorsalibus et suturalibus pallidus flavo-albis, pedibus longiset g acilioribus. Long. 1. Hab. Otis tarda.

4. Numidæ. N. Livide flavus, nitidus, lævis capite sub panduriformi, margine laterali nigro, abdomine fasciis dorsalibus fuscis duobus interrupte distincto. Long. ¾. Hab. Numida meleagris.

5. Olivaceus. N. Pallide fulvo-flavus; capite sub cordato, maculâ picea utrinque compuncto, abdominis margine laterali piceo, femore superne fusco. Long. $\frac{2}{3}$. Hab. Nucifraga Caryocatactes.

6. Gracilis. N. Pallide flavo-albus, nitidus, lævis; capite rotundato, macula conica, utrinque compuncto, abdomine fasciis saturate castaneis in margine laterali distincto. Long. $\frac{1}{2}$. Hab. Hirundo urbica.

7. Uncinosus. N. Pallide flavo-albus; capite subcordato, margine abdominis laterali maculis uncinatis piceis transversis compuncto. Long. ♂ $\frac{1}{2}$ ♀ $\frac{2}{3}$. Hab. Corvus cornix.

8. Marginalis. N. Pallide fulvus, nitidus, glaber; capite cordato, maculâ angulari plena utrinque distincto, margine metathoracis posteriori acute angulato, margine abdominis laterali fasciâ angusta fusca ornato. Long. $\frac{2}{3}$. Hab. Turdus pilaris.

* * Capite oblongo et rotundato.

9. Fuscus. N. Testaceus, nitidus et pubescens, margine obscure fusco circumcincto; abdomine fasciâ lata dorsali fusca interrupte distincto, femore maculâ fusca compuncto. Long. $\frac{2}{3}$—1. Hab. Circus rufus et Milvus Ictinus.

10. Rufus. N. Nitide fulvus, pubescens; margine metathoracis, posteriori tridentato, abdomine obscure cincto, capite fascia ferrugineâ præ antennis impresso. Long. $\frac{3}{4}$. Hab. Falco Tinnunculus.

11. Cuculi. N. Fulvus, glaber, nitidus; metathoracis margine posteriori ad medium producto, abdomine fasciis transversis obscurioribus distincto. Long. $\frac{3}{4}$. Hab. Cuculus Canorus.

12. Tessellatus. N. Pallide flavo-albus, margine nigro; capite panduriformi, abdomine macularum quadrangu-

larum et pallide fuscarum duplici serie insperso. Long. $\frac{3}{4}$. Hab. Botaurus stellaris.

13. Limbatus. N. Pallide flavo-albus, glaber, nitidus, margine laterali nigro; capitis fronte rotundatâ, pedibus subcrassis et annulis obscuris. Long. $\frac{3}{4}$. Hab. Loxia curvirostra.

14. Subcuspidatus. N. Pallide fulvo-flavus, glaber, splendens; capite notâ angulata castanea distincto utrinque, clypeo subacuminato, abdomine fasciis transversis fulvis notato. Long. $\frac{2}{3}$. Hab. Coracias garrula.

15. Argulus. N. Elongatus; caput et thoracem testaceus, abdominis fasciæ transversæ, duobus rotundis albis inter se conjunctis maculis utrinque notatæ; antennæ et tibiæ fuscis annulis. Long. 1. Hab. Corvus frugilegus.

16. Viscivori. N Colore dilutè stramineo, nitidus, glaber; caput fulvo-flavum habens utrinque fasciam latam semicircularem castaneam; abdominis suturæ valde marginatæ margo lateralis fulvus. Long. $\frac{3}{4}$. Hab. Turdus Viscivorus.

17. Fulicæ. N. Brevis pallide; testaceo-flavus, nitidus, glaber, margo lateralis fulvus; clypei margo latus castaneus. Long. $\frac{1}{3}$. Hab. Fulica atra.

* * * Capite sub-triangulari et sub-conico.

18. Decipiens. N. Testaceus, lævis, nitidus, subpubescens; margine thoracis et abdominis laterali saturate fusco, capite et prothorace obscure castaneis. Long. $\frac{2}{3}$. Hab. Recurvirostra Avocetta.

19. Hæmatopi. N. Pallide flavo-albus, margine laterali nigro; capite pallide fulvo-flavo, trabeculis fuscis; abdomine sub clavaformi. Long. $\frac{2}{3}$. Hab. Hæmatopus Ostralegus.

20. Sellatus. N. Opalino-albus, lævis, nitidus; margine capitis thoracis et abdominis nigro, segmentisque

hujus nota obscura sub-lunari in medio distinctis. Long. 1. Hab. Sterna Hirundo.

21. Vanelli. N. Pallide testaceus, lævis, nitidus; capite elongato et conico, cum margine laterali interrupte obscuro, abdomine fasciis piceo obliquis utrinque distincto. Long ♂ ½ ♀ ⅔. Hab. Vanellus griseus.

22. Merulensis. N. Albus, lævis, nitidus, margine abdominis laterali castaneo, notis nigris angularibus; insperso Capite et thorace læte flavis. Long. 1⅓. Hab. Turdus merula.

23. Glandarii. N. Pallide testaceus flavus, lævis, nitidus; margine abdominis saturate fusco, capite sub conico. Long. ¾. Hab. Garrulus glandarius.

24. Cuspidatus. N. Pallide testaceus, oblongo ellipticus, leviter pubescens; capite conico cum margine laterali castaneo, metathorace postice acute angulato, abdomine elliptico cum margine laterali nigro-castaneo et serrulato. Long. ½. Hab. Rallus aquaticus.

25. Iliaci. N. Pallide flavo-albus, nitidus, lævis, cum fascia marginali angusta nigra; capite et thorace testaceo-flavus. Long. ¾. Hab. Turdus iliacus.

26. Clavæformis. N. Capite et thorace pallide fulvescentibus; abdomine oblongo et clavaformi, pallideque flavo-albo, cum margine laterali fulvo; pedibus crassis. Long. ♂ ½. ♀ ¾. Hab. Columba palumbus.

27. Annulatus. N. Testaceo-flavus; abdomine ad medium fusco, cum segmentis annulis fere nigro circumcinctis, antennis longis et sub-clavatis. Trabeculis prominentibus. Long. ¾. Hab. Œdicnemus crepitans.

28. Nebulosus. N. Pallide flavo-albus, margo lateralis splendide fulvus; sex segmentis, a capite proximis triangularibus castaneis lituris notatis; caput et thoracem

pallide fulvus, sincipite acutissimo, margo lateralis castaneis et piceis maculis notatus. Long ¾. Hab. Sturnus vulgaris.

29. Apiastri. N. Splendide fulvo-flavus, nitidus, glaber, margo lateralis castaneus. Long ½. Hab. Merops Apiaster.

30. Ochropi. N. Saturate castaneus, glaber, nitidus; caput longissimum, clypeus ochraceus. Long. ♂ ¾ ♀ 1. Hab. Totanus Ochropus.

31. Attenuatus. N. Castaneus, nitidus, glaber, margo lateralis niger; caput attenuatum splendide fulvum. Long. ♂ ½ ♀ ⅓. Hab. Crex pratensis.

32. Strepsilaris. N. Fuscus, glaber, nitidus, margo lateralis piceo-niger; caput saturate castaneum, fronte duabus semicircularibus transversus nigris fasciis notata. Long ½. Hab. Strepsilas interpres.

33. Hiaticulæ. N. Caput, thoracem, et abdominis, marginem lateralem splendide fulvo-flavus, nitidus, glaber; marginis hujus singula segmenta habent in medio latam transversam, luridam fasciam. Long. ¾. Hab. Charadrius Hiaticula.

34. Fusco-Marginatus. N. Pallide testaceo-flavus, nitidus, glaber, pubescens; caput elongatum, triangulare, dilute fulvum; thoracis et abdominis margo lateralis piceo-fuscus. Long. ½. Hab. Podiceps auritus.

35. Rallinus. N. Pallide flavo-albus, nitidus, glaber, depressus; caput quod est elongatum; thoracem et abdominis, marginem lateralem pallide fulvus; metathoracis anguli antici tumidi. Long. ♂ ½ ♀ 1. Hab. Rallus aquaticus.

36. Alcæ. N. Caput et thoracem splendide fulvo-flavus, nitidus; capite oblongo, fasciam sinuatam saturate

castaneam utrinque habente; abdomine fascias lateralis latas obscure testaceas habente, pedes fulvi. Long. $\frac{2}{3}$. Hab. Alca Torda.

37. Œdicnemi. N. Pallide testaceo flavus, nitidus, pubescens; caput amplum, sub-conicum, margine laterali castaneo, antennæ brevis et crassæ, pedes crassi. Long. $\frac{1}{2}$. Hab. Œdicnemus crepitans

38. Stramineus. N. Pallide flavo-albus, nitidus, glaber, sub-translucens; abdominis margo lateralis dilute testaceus; pedes crassi validi. Long. $\frac{2}{3}$. Hab. Picus major et viridis.

39. Phalaropi. N. Dilute testaceo-flavus; caput pallide castaneum, abdomen claviforme, versus apicem fulvissimum; margine laterale piceo-nigro, femur posterius acute dentatum. Long. ♂ $\frac{1}{2}$ ♀ $\frac{2}{3}$. Hab. Phalaropus lobatus.

40. Elongatus. N. Elongatus; testaceus, nitidus, glaber; caput conicum, fronte multum producta. Long. 1. Hab. Hirundo urbica.

41. Hypoleucus. N. Colore cinnamomi, nitidus, glaber; clypeus impressine bifurca, antennas et pedes fulvo-flavus; capitis, thoracis et abdominis margo lateralis saturate castaneus; abdomen subtus albidus. Long. $1\frac{1}{2}$. Hab. Caprimulgus europæus.

42. Podicepis. N. Elongatus; caput et thoracem dilute ochraceo-flavus; abdomen pallide flavo-album, singulis segmentis lateralibus triangulari nigro signo notatis. Long. 1. Hab. Genus Podiceps.

43. Junceus. N. Fuscus, glaber, nitidus, pubescens; caput elongatum, antennæ sub-clavate, thoracis et abdominis margo lateralis niger, spatia stigmatice parum, fulvescentia; femur anticum amplissimum. Long. $\frac{3}{4}$. Hab. Vanellus cristatus.

44. Numenii. N. Obscure castaneus, nitidus, glaber;

caput oblongum ante oculus sinuatum; metathorace hypotrapezoeides, umbra fuscissima; abdominis medii per longitudinum discurrenti. Long. ♂ 1 ♀ 1⅛. Hab. Numenius arquata.

45. Phæopi. N. Pallide ochraceus, nitidus, glaber; margo lateralis piceus; margo suturalis pallidus; metathorax hypotrapezoeides; margo acuminatus. Long. ♂ ¾ ♀ 1. Hab. Numenius phæopus.

46. Holophæus. N. Castaneus, nitidus, glaber; clypeus obtusus, abdomen cylindraceum, annuli suturales pallidi; pedes crassi. Long. 1. Hab. Machetes pugnax.

47. Cingulatus. N. Splendide castaneus, nitidus, glaber; caput conicum, maculis duabus lateralibus et striis subangularibus a base antennarum ad occiput; abdominis septem segmenta a capiti proxima, picea transversa claviformi fascia utrinque. Long. 1. Hab. Genus Limosa.

48. Obscurus. N. Obscure castaneus, nitidus, glaber, pubescens; clypeus valde productus, caput fasciis duabus semicircularibus nigris ante antennas, et lineis duabus in longum impressis ad occiput proxima, margine laterali piceo-nigro. Long. ½. Hab. Genus Tringa, &c.

49. Fissus. N. Obscure castaneus, nitidus, glaber, margo lateralis niger; clypeus obtusus, pedes maxime crassi. Long. ½. Hab. Charadrius minor.

50. Tenuis. N. Obscure castaneus, nitidus, glaber; clypeus obtusis, subemarginatus, areolæ stigmaticæ pallidæ, abdominis margo lateralis niger. Long. 1. Hab. Hirundo riparia.

51. Scolopacis. N. Splendide castaneus, glaber, nitidus; clypeus latus, truncatus, capitis in margine laterale sinus profundus; abdominis segmentoram in margine laterali angularis nigra macula. Long. ♂ ¾ ♀ 1. Hab. Scolopax gallinago.

52. Cyclothorax. N. Pallide fulvo-flavus, margo

lateralis saturate castaneus; prothorax sub-orbicularis, metathorax transversus, postice truncatus. Long. $\frac{3}{4}$. Hab. Fringilla Montifringilla.

53. Furvus. N. Lineæ albæ, ab antennarum basi versus occiput productæ intus convexæ; fasciis abdominalibus in mare 1-5 in femin. 1-7 fissus. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Totanus maculatus et glottis.

54. Nycthemerus. N. Pedibus cinereis, segmentis abdominalibus 3-6 nigris. Long. $\frac{1}{2}$. Hab. Sterna minuta.

55. Eugrammicus. N. Segmentis abdominalibus fascia basali transversa nigra. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Larus minutus.

56. Punctatus. N. Segmentis abdominalibus utrinque puncto basali necnon lineola transversa media nigris. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Larus ridibundus.

57. Stenopyx. N. Clypeo bicornuto, vertice bistriolato, segmentis corporis omnibus utrinque nigro-marginatis, mediis abdominalibus in mare 2 punctatis. Long. $1\frac{1}{4}$—$1\frac{1}{3}$. Hab. Anas rufina.

58. Cruciatus. N. Maculis abdominalibus fuscis argute marginatis, limbo externo punctoque medio pallidiori flavis. Long. $\frac{2}{3}$. Hab. Lanius collurio.

59. Varius. N. Gracilior, capite obscuriori, maculis abdominalibus medio subcontiguis, omnibus 2-punctatis in mare, mediis, furcatis in femina. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Corvus, Corone, et Monedula.

Sub-Genus III. GONIOCOTES.

1. Compar. G. Capite magno, postice acute angulari, setifero; abdomine albo lato obovato, margine ferrugineo. Long. 1—$1\frac{3}{4}$. Hab. Genus Columba.

2. Hologaster. G. Capite thorace pedibusque pallido-flavis, cum fasciis marginalibus et maculis piceo-nigris; fasciis abdominis lateralibus cinereis, nigre emarginatis. Long $1\frac{1}{2}$. Hab. Gallus domesticus.

Sub-Genus IV. GONIODES.

1. Falcicornis. G. Nitide castaneo-flavus, splendens; capite magno, subquadrato, angulis occipitis acuminatis; antennarum masculi articulo primo maximo, dentato; abdomine lato, obtuso, fulve flavo, cum fasciis lateralibus transversis, lingulatis, jecinoreis, segmento ultimo nitide castaneo. Long. $1\frac{1}{2}$—2. Hab. Pavo cristatus.

2. Styliger. G. Nitide castaneo-flavus, splendens; angulis occipitis externis longissimis retrorsum versis; thorace acute angulari, nigre marginato; abdomine pallide flavo-albo, fasciis lateralibus transversis confluentibus, jecinoreis. Long. $1\frac{1}{4}$. Hab. Meleagris Gallopavo.

3. Colchici. G. Nitide castaneo flavus; capite subquadrato, angulis temporalibus obtusis; margine thoracis lato, ferrugineo; abdomine pallide flavo-albo, fere orbiculari, singulis segmentis, (primo et ultimis duobus exceptis,) fasciam piceo nigram arcuatam habentibus. Long 1—$1\frac{1}{4}$. Hab. Phasianus Colchicus.

4. Ortygis. G. Elongatus, pallido-flavus: capite subquadrato, angulis temporalibus obtusis; prothorace semicirculari, metathorace transverso, abdomine fere albo, singulis segmentis (primo et ultimis duobus exceptis) fasciam castaneam vel piceo-nigram, spatulæformem habentibus. Long. $\frac{3}{4}$—$1\frac{1}{4}$. Hab. Ortyx Virginiana.

5. Dispar. G. Nitidis castaneus, splendens; margine temporali prolato, acute angulari; antennarum masculi

articulo primo relative parvo, tertio securiformi; abdomine pallide flavo, obovato vel postice obtuse truncato, margine laterali ferrugineo. Long. $\frac{3}{4}$. Hab. Perdix cinerea.

6. Chelicornis. G. Fulvo-flavus, lævis, splendens; capite latissimo, angulis temporalibus obtusis; metathorace magno cum angulo posteriore sub-truncato; abdomine lato, pallide flavo-albo, fasciis lateralibus spatulæformibus, intense castaneis. Long. 1—$1\frac{1}{2}$. Hab. Tetrao Urogallus.

7. Tetraonis. G. Castaneo-flavus, lævis, splendens; capite sub-quadrato, angulis temporalibus acutis; metathorace arctiore, et majis sinuato quam in Gon Chelicornis. Long. 1—$1\frac{1}{8}$. Hab. Tetrao Tetrix et Scoticus.

8. Dissimilis. G. Fulvus, lævis, splendens, pubescens; capite magno, sub-quadrato, angulis temporalibus prominentibus, fasciis duabus latis, castaneis, ante antennas; prothorace brevi, transverso; abdomine magno, fasciis lateralibus confluentibus cum fasciis suturalibus intense castaneis in margine superiore cujusque segmenti. Long. $1\frac{1}{8}$. Hab. Gallus domesticus.

9. Numidianus. G. Pallide stramineo-flavus, lævis, nitidus, cum margine nigro; capite sub-orbiculari; abdomine acuminato, cum fasciis transversis incontinuis piceo-nigris. Long. $\frac{3}{4}$. Hab. Numida Meleagris.

Sub-Genus V. LIPEURUS.

* Capite rotundato.

1. Variabilis. L. Sordide albus, lævis, nitidus, nigre marginatus; capite pallidi flavo, cum macula nigra utrinque post oculos; fascia incontinua nigra per medium abdomen. Long. $\frac{2}{3}$—1. Hab. Gallus domesticus.

2. Polytrapezius. L. Pallide fulvo-albus, nigra mar-

ginatus; capite panduriforme, abdomine elongato, omnibus segmentis (excepto ultimo) maculam glauco-fulvam, trapezoidalem utrinque habentibus. Long. $1\frac{1}{2}$—$1\frac{3}{4}$. Hab. Meleagris Gallopavo.

3. Gyricornis. L. Castaneus, lævis, nitidus; capite sub-cordato; antennis capite longioribus, cum primo articulo longissimo, torto; abdomine obscure castaneo, suturis pallidis. Long. 1. Hab. Sterna hirundo.

4. Quadripustulatus. L. Elongatus; pallide fulvo-flavus, nitidus, pubescens; fasciis abdominis piceo-fulvis, maculam fulvam nigre marginatam utrinque habentibus, segmentis masculi primo sexto septimo incontinuis; margine pedum superiore piceo-nigro. Long. $1\frac{3}{4}$. Hab. Aquila chrysaëtos et albicilla.

5. Sulcifrons. L. Piceo-castaneus, puncturatus, pubescens; capite sulcos quosdam obliquos transversos ad basim habente; abdomine ochraceo, cum margine intense castaneo. Long. 1—$1\frac{3}{4}$. Hab. Aquilla albicilla.

6. Tadornæ. L. Elongatus, lacteus, lævis, nitidus; capite thorace et abdomine maculas nigras marginales habentibus; tarsis ferrugineis. Long. $1\frac{1}{2}$. Hab. Tadorna vulpenser.

** Capite elongato.

7. Versicolor. L. Elongatus, pallide flavo-albus; capite et thorace marginatis, illo longo, prolato; abdomine maculas nigras laterales trapezoidales ostendente; pedibus longissimis cum margine superiore nigro. Long. 2. Hab. Ciconia alba.

8. Baculus. L. Elongatus, abdomine fere cylindrico, nubile flavo-albo, cum seria utrinque macularum magnarum, fuscarum trapezoidalium; capite et thorace nitido-castaneis. Long. 1—$1\frac{1}{4}$. Hab. Columbidæ.

9. Pelagicus. L. Elongatus, depressus, nitido-cas-

taneus; capite thorace et abdomine marginem, fusco-piceam habentibus. Long. 2. Hab. Thalassidroma pelagica.

10. Leucopygus. L. Glauco-albus, depressus, nitidus; marginibus lateralibus nigris, abdominis segmentis ult. duobus immaculatis. Long. 1. Hab. Ardea cinerea.

11. Temporalis. L. Pallido-ochraceus; capite et prothorace nitido-ferrugineis; abdomine elongato clavato, margine laterali hepatico-fulvo, annulis suturalibus pallidis. Long. $1\frac{1}{2}$. Hab. Genus Mergus.

12. Squalidus. L. Capite thorace pedibusque pallide ochraceo-flavis; abdomine nubile albo, margine seriem macularum piceo-nigrarum quadrangularium, habente; foraminibus stigmaticis pallidis. Long. 1—$1\frac{3}{4}$. Hab. Genus Anas.

13. Jejunus. L. Filiformis, pallide flavo-albus, cum margine piceo; segmentis octo prioribus fascias quadrangulares habentibus; pedibus superne fulvis. Long. 1—$1\frac{1}{2}$. Hab. Genus Anser.

14. Stellaris. L. Pallido-flavus; abdomine acute ovato, segmentis quarto, quinto, sexto, septimo fasciam fulvam et maculas duas nigras habentibus. Long. 1—$1\frac{1}{4}$. Hab. Botaurus Stellaris.

15. Ebræus. L. Albus; fronte maculas nigras quatuor habente; abdomine oblongo ovato, singulis segmentis (priore et ultimis duobus exceptis) maculam literæ Hebræorum ב (Daleth) similem ostendentibus. Long. $1\frac{3}{4}$—2. Hab. Grus cinerea.

16. Staphylinoides. L. Piceo-niger, lævis, splendens; capite nigro obtuse triangulari; antennis pallido-flavis cum articulo tertio tuberculoso fusco. Long. 1—$1\frac{1}{4}$. Hab. Sula Bassana.

17. Brevicornis. L. Castaneus, lævis, nitidus; capite obtuse triangulari; antennis masculi brevibus crassis; ab-

domine ovato cum suturis pallidis. Long. 1. Hab. Phalacrocorax cristatus.

18. Luridus. L. Elongatus, pallido-fulvus; clypeo valde prolato; margine abdominis nigro, segmentis singulis fascias pallido-fuscas quadrangulares habentibus. Long. 1. Hab. Fulica atra, et Gallinula chloropus.

Sub-Genus VI. ORNITHOBIUS.

1. Cygni. O. Albus, lævis, splendens; segmentis abdominis sex prioribus maculam nigram adbasim marginis lateralis, segmento ultimo per totum nigro; unguibus castaneis. Long. 2. Hab. Genus Cygnus.

2. Gonioplurus. O. Pallide flavo-albus; capite maculas nigras sex habente; metathorace postice acuminato; abdomine elongato, segmentis septem prioribus signum piceo-nigrum, trilaterale in margine quoque habentibus. Long. 2. Hab. Cygnus Canadensis.

3. Atro-marginatus. O. Nitide albus splendens; capite obtuse panduriforme; margine abdominis nigro arcto. Long. $1\frac{1}{4}$. Hab. Cygnus Canadensis.

Genus II. TRICHODECTES.

* Capite latissimo, corpore suborbiculari, brevi.

1. Crassus. T. Pallido-fulvus; capite et thorace nitido-ferrugineis flavis, illo profunde emarginato; cum fasciis nigris quatuor antice et duabus ab oculis ad occiput pertinentibus; abdomine orbiculari. Long. $\frac{3}{4}$. Hab. Meles Taxus.

2. Latus. T. Pallido-fulvus; capite et thorace ferrugineo-flavis, illo subquadrato cum maculis duabus nigris antice, et fasciis duabus ab antennis ad occiput diagonicis; abdomine ovali. Long. $\frac{1}{4}$—$\frac{3}{4}$. Hab. Canis familiaris.

3. Subrostratus. T. Clypeo elongato triangulari, apice bituberculato. Long. Hab. Felis maniculata.

4. Vulpis. T. Capite et thorace nitide fulvo-flavis, illo suborbiculari cum maculis nigris. Long. $\frac{1}{2}$. Hab. Canis vulpes.

5 Dubius. T. Capite et thorace fulvo-flavis, clypeo acute utrinque prolato; abdomine pallide fulvo-albo, fere quadrato Long. $\frac{1}{3}$. Hab. Genus Mustela.

* * Capite sub-rotundato, abdomine oblongo.

6. Scalaris. T. Capite et thorace nitido-ferrugineis, illo obcordato; antennarum articulo tertio longissimo fusiformi. Long $\frac{1}{2}$. Hab. Bos Taurus.

7. Equi. T. Capite et thorace nitido-castaneis, illo magno transverse quadrato; antennarum articulo tertio longissimo clavato. Long. 1. Hab. Equus Caballus.

8. Longicornis. T. Elongatus; capite et thorace nitido-fulvis; clypeo profunde emarginato; antennarum articulo secundo longissimo, tertio acuto. Long. 1. Hab. Cervus dama.

9. Sphærocephalus. T. Capite fere orbiculari; clypeo ruguloso, pilis rigidis denso; antennarum articulo tertio longissimo, clavato. Long. $\frac{3}{4}$. Hab. Ovis Aries.

10. Similis. T. Capite et thorace nitido-castaneis, læte pubescentibus, illo rotundato; antennarum articulo tertio longissimo, cylindrico; pedibus gracilibus. Long. $\frac{3}{4}$. Hab. Cervus Elaphus.

Genus I. PHILOPTERUS. (*Nitzsch.*)

Burmeister, Stephens.—*Pediculus*, Linn. Fabr.—*Ricinus*, De Geer, Latreille. *Nirmus*, Hermann, Olfers, Leach, Samouelle.

GENERIC CHARACTER.

Head depressed, scale-like, horizontal.

Mandibles somewhat angular, terminating in two strong teeth.

Labrum dilated at the base, loose, expansible, inflated, and in some species changeable in appearance, margin free, slightly notched.

Labium small, margin notched, so that when the mouth is closed an aperture is left.

Labial palpi small and two jointed.

Antennæ five jointed, inserted into the lateral margin of the head, the third joint in the males of some species somewhat branched or curved backwards upon the first, so as to act like a claw or pair of forceps.

Eyes on the lateral margin of the head behind the antennæ, slightly convex, sometimes inconspicuous or absent.

Thorax of two segments, the prothorax narrower than the head.

Legs formed for climbing; *tarsus* two jointed, curved; *ungues* two, parallel, and contiguous, not capable of spreading, and having the appearance of being single, which folding upon two short spines at the base of the tibia, forms an efficient claw.

Sub-Genus I. DOCOPHORUS. (*Nitzsch.*)

SUB-GENERIC CHARACTER.

Head large, sub-triangular, generally very broad at the base and rotundate, furnished with two moveable organs (*trabeculæ*) before the antennæ; *antennæ* simple and uniform in both sexes; *prothorax* small, much narrower than the head; *meso-thorax* and *meta-thorax* united, large, either transverse or angular; *abdomen* broad, ovate, sometimes nearly oval, or elongate-ovate, last segment in the male entire and rotundate.

This division or sub-genus is by far the most numerous in species, and appears to infest Birds of each of the Orders, excepting *Columbidæ* and *Gallinacea*, upon which I have never detected any; nearly all the species are characterized by two dark coloured lines, which pass diagonally from the trabeculæ to the occiput, or point of junction with the prothorax, and by the segments of the abdomen having a dark coloured triangular or oblong patch on each side, which very rarely extend and meet in the centre.

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* Metathorax terminating posteriorly in an angle; trabeculæ large and distinct; head with two diagonal dark lines.

1. Docophorus atratus. (Louse of the Rook.)

Plate IV. Fig. 8.

Milky white, shining, and hairy; abdomen oval, with triangular deepf uscous yellow, lateral patches, margined with black; femora and tibiæ with black bands.

Docophorus atratus. Nitzsch. Germ. Mag. iii. p. 920. Burmeist. Handbuch Entom. vol. ii. pt. ii. p 424. Spe. 5. Step. Cat. pt. ii. p. 330. —Pulex Corvi. Redi Exp. pl. xvi.—Pediculus Corvi. Linn. Syst. Nat. ii. 1018-14. Faun. Suec. 1050. Stew. Ele. Nat. Hist. ii. 279. Turt. iii. 696. Fab. Syst. Ent. 806. 13. Fab. Faun. Grœn. 217. n. 185. Mull. prodr. 2190. Faun Frid. 806. Fugle-Laus. Bohn. v. 181.—The Louse of the Crow, Albin. sp. pl. xlviii. fig. sup. Shaw Gen. Zool. vi. pl. 119. fig. supr. Grœnl. Tullukab. Koma.

Milky white, shining, and hairy; head large, elongate, triangular, the anterior part with a deep fuscous, sub-rhomboidal depression; two black diagonal fascia extending from the anterior part to the occiput; eyes small, black, and prominent; trabeculæ very large, sub-conical, obtusely truncate; antennæ with the first and second joints the largest, the three terminal cylindrical and equal; prothorax transverse, very narrow; metathorax large, the width of the head, acutely angular behind, both with a broad black margin; abdomen large, oval, segments nearly equal, each, except the penultimate, with an acutely triangular lateral patch on each side, of a deep fuscous yellow, or dark chestnut, margined internally with black; the sutures of the abdomen and posterior margin of the thorax fringed with white hairs: legs long and thick; tibia, with a black line on the external edge, terminating at the apex transversely; anterior femur with a black band at the apex; four posterior with two bands. Length 1.

This species, which is perhaps the best known, is very common on the Rook (Corvus frugilegus); from which bird it has been communicated from Cambridgeshire by the Rev. L. Jenyns; and from Belfast by W. Thompson, Esq.; from Northumberland, taken on the Hooded Crow (Corvus cornix), by P. J. Selby, Esq. *The lateral patches are occasionally all black.*

2. Docophorus Ocellatus. (Louse of the Crow.)

Plate III. Fig. 10.

Milky white, shining and hairy; head elongate, triangular; abdomen with conical black lateral fasciæ, having a large white central space in each; femur and tibia with black annuli.

Docophorus ocellatus. Nitzsch. Germ. Mag. iii. p. 920. Burmeister. Handbuch. d. Ent. ii. pt. ii. p. 424. spe. 6. Steph. Cat. pt. ii. p. 330. Lyonet. Mem. du Muse. 18. p. 266. pl. 13. fig. 3. Children App. to Back's Land Exped. p. 537.—Pediculus Ocellatus. Scop. Ent. Carniol. 382. no. 1038.—Pediculus cornicis. Fabr. Syst. Ant. 344. Syst. Ent. 807. Syst. Inst. ii. 479. 16.

Milky white; head large, elongate, triangular, anterior part deeply notched, with a large pale chestnut depression, and two diagonal black bands from the anterior of the trabeculæ to the occiput, and a short one behind each eye; eyes prominent and black; antennæ slender, the first joint large and conical, second very long, cylindrical, with a black spot on each side, the terminal three nearly equal, each with a dark base; trabeculæ large, curved, and conical; prothorax small, transverse, angles rounded, slightly channelled; metathorax nearly the width of head, transversely triangular, both with a black lateral margin; abdomen large, ovate, the first seven segments having a conical black fasciæ, with a large white central space on each side, the last two with a narrow transverse black band; legs long and thick; femora and tibiæ with black fascia and annuli; ungues chestnut Length 1.

Communicated from the Hooded Crow (Corvus cornix), by Mr. Selby and Mr. G. R. Denny; from the Carrion Crow (Corvus corone) by Rev. L. Jenyns. This species is readily distinguished from the *Atratus*, with which it is

occasionally found in society, by the central spaces to the lateral fasciæ of the abdomen, being milky white, while in the former they are varied from dull yellow to a chestnut. It is also a widely spread species, having been brought home by the expedition under Captain Back in 1836.

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3. Docophorus Semisignatus. (Louse of the Raven.)

Plate I. Fig. 5.

Milky white, shining, and hairy; head large, very broad, subcordate, with a colourless depression in front; abdomen with the first seven segments, having a conical black fasciæ on each side; femora, with two black bands.

Docophorus semisignatus? Burmeister Handbuch ii. pt. ii. p. 424.

Head large, very obtusely triangular or subcordate, with a colourless depression in front, and two black diagonal bands from the antennæ to the occiput; eyes small, black; antennæ, with the first two joints very large, the last three small, equal and cylindrical, with a black spot on each side; trabeculæ large, thick, obtuse; prothorax transverse, angles rotundate; metathorax about the width of the head, sub-triangular, lateral margins black; abdomen very broad, nearly orbicular; the first seven segments with a lateral, conical, black fascia, each having a white centre, last two all white; legs thick; femora with two black bands; tibiæ with a black annulus at the apex. Length 1.

Found on the Raven (Corvus Corax), and communicated by that zealous investigator of the Zoology of Ireland, William Thompson, Esq. of Belfast. The great width of the head, and colourless anterior depression, are sufficient to distinguish this insect from D. *ocellatus*, to which it approaches very nearly; Dr. Burmeister records the D. *se-*

misignatus as parasitic on the Raven, but, as he does not give the specific character of that species, I have no means of identifying it with Mr. Thompson's specimens; but, lest I should uselessly increase species, I have ventured to quote his synonyms.

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4. Docophorus Picæ.—*Denny.* (Louse of the Magpie.)

Plate I. Fig. 9.

Head and thorax dull chestnut and shining, the latter margined with black; abdomen pale yellow white, lateral fascia pitch colour; legs with black annuli.

Head triangular, with two black diagonal bands extending from the trabeculæ to the occiput; antennæ rather thick, pale brown; trabeculæ large, sub-triangular; prothorax nearly orbicular, slightly channelled in the centre, lateral margin black; metathorax transversely triangular, superior margin rotundate, with a fovea at each side of the base of the prothorax, the lateral margin black; abdomen elongate, ovate, pale yellow-white, and hairy, the first seven segments with a pitch-coloured lateral fascia on each side, the eighth entirely pitch colour, ninth, pale like the central space; legs pale brown; femora and tibiæ with black annuli. Length $\frac{3}{4}$.

The only specimen of this species which I have seen, was forwarded by Rev. L. Jenyns, from the Magpie (Pica caudata).

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5. Docophorus guttatus. (Louse of the Jackdaw.)

Plate III. Fig. 8.

Milky white; abdomen with the lateral fasciæ pitchy black, the first six with a white central circular spot.

Docophorus guttatus. Burmeister Handbuch, vol. ii. pt. ii. p. 425.

Head very pale, tawny yellow, sub-triangular, front produced and notched, the anterior depression chestnut, the diagonal bands black, arising very near the apex; eyes prominent; trabeculæ strong and conical; antennæ pale yellow, the first and second joints much the largest, the three remaining with a deep brown basal annulus; prothorax transverse about half the width of the head, channelled in the centre; metathorax the width of the head, transverse, basal margin sub-angular, fringed with stiff hairs, lateral margins of deep chestnut brown; abdomen ovate, milky white, the segments nearly equal, the lateral patches and two last segments pitchy black, the first six with a circular white spot in the centre; legs pale brown; tibiæ with a black annulus at the apex; anterior femora with a black transverse band, last pair with two bands; posterior femora very much thickened. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns, from the Jackdaw (Corvus monedula), upon which bird I have since found a single example. The smaller size of this species, but more especially the circular white spots on the sides of the abdomen, readily distinguishes this species from the other Nirmi of the Corvine family.

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6. Docophorus crassipes. (Louse of the Nutcracker.)

Plate III. Fig. 6.

Head dull chestnut, sub-triangular, deeply sinuated before the eyes; abdomen ovate, milky white, with pitch coloured lateral fasciæ; legs very thick.

Docophorus crassipes. Burmeister Handbuch, ii. pt. ii. p. 425, sp. 7.

Head and thorax dull chestnut, shining, the former with two diagonal brown bands from the origin of the trabeculæ

to the occiput, anteriorly notched with a sub-lozenge-shaped depression, lateral margin deeply sinuated before the eyes; trabeculæ thick and strong and conical, slightly curved; antennæ pale tawny, slender; eyes very prominent; prothorax transversely oval, deeply channelled; metathorax the width of the head, transverse, basal margin sub-angular, fringed with hairs, lateral margin black; abdomen large, ovate, pale yellow-white, the lateral fasciæ pitch coloured, obtusely conical; legs fuscous, very thick; posterior femora much incrassated, with an angular projection beneath; tibiæ clavate; ungues tawny. Length 1.

The only example of this species which I have seen, I found upon the skin of a Nutcracker (Nucifraga caryocatactes).

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7. Docophorus superciliosus. (Louse of the Great Black and White Woodpecker.)

Plate III. Fig. 9.

Bright chestnut; head subtriangular, sinuated on the sides; lateral margin of the abdomen serrulated towards the apex.

Docophorus superciliosus. Burmeister Handbuch, ii. pt. ii. p. 427, sp. 23.

Head bright chestnut yellow, subtriangular, anterior margin notched, lateral deeply sinuated before the eyes; two deep chestnut diagonal bands from before the trabeculæ to the occiput; eyes prominent, surrounded by a fuscous spot; trabeculæ large, acute, and conical; antennæ pale yellow; prothorax small, transversely oval, channelled in the centre, and margined with deep chestnut; metathorax large, sub-triangular, posterior angle acute, ciliated, centre yellowish white, sides pale fulvous, extreme lateral margin

deep fuscous; abdomen obtusely ovate, yellow, white, and hairy, the lateral fasciæ bright chestnut, margined with deep brown, and a row of punctures, lateral margin serrulated towards the apex; legs pale, fulvous, very thick; posterior femora very much incrassated, acutely angulated beneath, apex with a dark band; tibiæ short and clavate, apex with a dark annulus. Length $\frac{3}{4}$.

I have seen but one specimen of this species, for which I was indebted to the Rev. L. Jenyns, who took it from the Great Spotted Woodpecker (Picus major).

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8. Docophorus communis.

Plate V. Fig. 10.

Chestnut and shining, with white hairs; head elongate, triangular, anterior part much produced; trabeculæ very large, curved; posterior femora much incrassated and toothed below.

Docophorus communis, Nitzsch. Germ. Mag. iii. p. 920. Burmeister Handbuch, ii. pt. ii. p. 425. Steph. Cat. pt. ii. p. 230. Children Appen. to Back's Land Expe. p. 536.—Ricinis Emberizæ. De Geer, vii. pl. 4. fig. 9.—Pediculus Emberizæ. Fab. Ant. 349. Stewart, ii. p. 300. Turt. iii. p. 699.—Pediculus Curvirostræ. Panz. Faun. 51. fig. 23. Schr. Beitr. Taf. 5. fig. 7-10.—Pediculus Pyrrhulæ. Schr. A. 506. Stew. ii. p. 300.—Pediculus Chloridis. Schr. A. 506. Stew. ii. p. 300.—Pediculus Citrinelle. Schr. A. 507. Stew. ii p. 300.—Pediculus Rubeculæ. Schr. A. 507. Stew. ii. p. 300. Nirmus Globifer. Olfer. 91.

Head and thorax bright chestnut and shining, the former very long, triangular, the anterior part much produced, with a large depression, and two dark diagonal bands from the antennæ to the occiput, base convex and rotundate; trabeculæ large, slightly curved and acute; eyes small and black, prominent; antennæ rather thick, second joint very long; prothorax transverse, angles rotundate, channelled

in the centre; metathorax the width of the head, acutely angular behind, posterior margin deep liver brown, ciliated with stiff hairs; abdomen short, ovate, yellow white, with numerous white hairs, the first seven segments with the lateral patches shading from liver brown to chestnut, the first three broad, the four following long, narrow, uniting in the centre, the eighth chestnut, the last white, the under side with a large brown spot near the anus; legs pale, variable, the anterior short; femora somewhat securiform, the posterior very large and thick; the femora acutely angulated or toothed beneath; tibiæ much flattened and armed at the extremity with two prominent spines; ungues when closed upon the apex of the tibiæ scarcely visible. Length $\frac{3}{4}$.

Parasitical upon several of the Insessorial Birds. The Rev. L. Jenyns found it upon the common Bunting; Mr. Doubleday upon the Crossbill; my brother sent me specimens from the Bullfinch and Nuthatch, and I have found it myself upon the Green Grosbeak, Yellow Bunting, Sparrow, and Lesser Whitethroat.

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9. Docophorus variabilis.—*Denny.* (Louse of the Dunlin.)

Plate III. Fig. 4.

Head and thorax bright chestnut, the former elongate, triangular; abdomen ovate, milky white, with deep liver-coloured fasciæ.

Head bright chestnut, elongate, triangular, anterior part much contracted, with a somewhat obtuse depression, and deeply sinuated before the antennæ, from which proceed a transverse and two diagonal impressed lines extending to the occiput, base broad and sub-trun-

cate; antennæ pale, tawny yellow, slender, sub-clavate; trabeculæ long, curved, and acute; eyes obscure; prothorax somewhat conical, with a broad depression in the centre; metathorax narrow, sub-triangular; abdomen acutely ovate, milky white, with the lateral fasciæ, and three terminal segments deep liver-brown; legs long, rather slender, light chestnut. Length $\frac{3}{4}$.

Communicated by W. M. Tweedy, Esq. of Truro, from the Dunlin (Tringa variabilis).

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10. Docophoris merguli.—*Denny.* (Louse of the Common Rotche.)

Plate III. Fig. 7.

Slender, chestnut, smooth and shining; head large and conical, with two transverse and two sub-angular longitudinal bands; thorax much smaller than the head; abdomen oblong, oval.

Head bright chestnut, yellow, large, conical, with an acuminate depression in front, two transverse liver-coloured bands and two sub-angular deep chestnut ones, extending from the antennæ to the occiput, where they become united; antennæ slender and cylindrical; trabeculæ large and acute; eyes small but prominent; prothorax very small, transversely conical, deeply channelled, lateral margin dark liver colour, base semicircular; metathorax small, posterior margin acutely angular; abdomen the width of the head, oblong oval, milky white, first segment and the lateral transverse, fasciæ on the six following deep chestnut, becoming much darker towards their extremities, with two foveolæ on each, eighth and ninth segments pale, tawny; legs tawny, yellow; anterior femora enlarged. Length $\frac{1}{2}$.

For an opportunity of figuring this species, which is the

only specimen I have seen, I am indebted to the friendship of T. C. Heysham, Esq. of Carlisle, who found it on the Common Rotche (Mergulus Alle).

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11. Docophorus fulvus. (Louse of the Jay.)

Plate II. Fig. 9.

Head, thorax and legs bright, tawny, shining, and hairy; head very large, elongate, triangular, sinuated on the sides; trabeculæ large; antennæ sub-clavate; lateral fascia of the abdomen ferruginous.

Docophorus fulvus. Burmeister Handbuch, ii. pt. ii. p. 425. spe. 3.—Pou du Geai. Lyonet. Mem. du Muse. 18. p. 271. pl. 13. fig. 6.

Head large, elongate-triangular, the anterior part produced and notched with an oblong depression, and two transverse semicircular chestnut lines proceeding from the trabeculæ to the centre, and two diagonal chestnut bands from the eyes to the occiput, lateral margin deeply sinuated, base convex and rotundate; trabeculæ large, strong, and curved; eyes dark and prominent; antennæ slender, subclavate, and pale tawny; prothorax small, transverse, with a fuscous channel in the centre, posterior margin convex; metathorax about the width of the head, acutely angular behind with a row of setigerous punctures; abdomen large, pale yellow white, with the first segment and the lateral fasciæ to the six following ferruginous, becoming gradually darker towards the apex, the last two segments fuscous; legs strong and thick; anterior femora angular. Length $\frac{1}{3}$.

I find this species not uncommon upon the Jay (Garrulus glandarius), and have received it from my brother, found on the same bird in Norfolk.

12. Docophorus leontodon. (Louse of the Starling.)

Plate V. Fig. 3.

Head and thorax bright chestnut, the former very much produced anteriorly; abdominal fasciæ elongate and acute, with numerous pale hairs.

Docophorus Leontodon. Nitzsch. Germ. Mag. iii. p. 290. Steph. Cat. pt. ii. p. 331. Burmeister Handbuch ii. pt. ii. p. 425. spe. 12.—Pediculus Sturni. Schrank Beitr. pl. 5. fig. 11. Stew. ii. p. 300. sp. 48.

Head elongate, triangular; clypeus very much produced, concave at the extremity with a large oblong depression, two narrow diagonal dark chestnut bands, extending from the antennæ to the occiput, basal margin rotundate; trabeculæ prominent and acute; antennæ pale yellow, rather thick; eyes small; prothorax transverse channelled; metathorax not so wide as the head, posterior margin deep chestnut and acuminate; abdomen broad, obtusely ovate, ashy white, the first segment entirely chestnut and acutely angular in the centre, the six following with an elongate, acute, lateral chestnut fascia on each side, eighth entirely chestnut, ninth small, with a spot on each side, the whole fringed with a number of yellowish hairs; legs pale chestnut, rather thick and strong; anterior femora sub-angular. Length $\frac{3}{4}$.

Common upon the Starling (Sturnus vulgaris).

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13. Docophorus ostralegi.—*Denny*. (Louse of the Oyster-catcher.)

Plate V. Fig. 4.

Chestnut, shining, with yellow hairs; prothorax conical; abdominal fasciæ tongue-shaped and acute; trabeculæ curved and acute.

Head sub-triangular, anteriorly notched, with an oblong quadrate depression, and two diagonal dark brown bands from the trabeculæ to the occiput, base rotundate; eyes prominent; trabeculæ tolerably large, curved and acute; antennæ rather slender, pale chestnut; prothorax conical, posterior margin convex; metathorax transverse, rather wider than the head, posterior margin deep chestnut and angular; abdomen broad, ovate, yellowish white, emarginate, the first eight segments with an elongate, acute, tongue-shaped bright chestnut fascia on each side, spiracular apertures pale, lateral margin liver colour, last segment chestnut; legs thick; anterior femora sub-angular. Length $\frac{3}{4}$.

Common upon the Oyster-catcher (Hæmatopus Ostralegus).

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14. Docophorus ralli.—*Denny*. (Louse of the Water-Rail.)

Plate V. Fig. 6.

Bright chestnut, yellow, shining and smooth; head large, triangular; legs very thick; abdomen obtusely ovate, with a pale tawny margin.

Head bright chestnut, yellow, elongate, triangular, anteriorly produced with an imperfect marginal line, two semicircular lines meeting and uniting in the centre, and two dark chestnut diagonal narrow bands from the antennæ to the occiput; eyes very small and black; antennæ short, thick, and cylindrical; trabeculæ small; prothorax transverse; metathorax small, about the width of the head, lateral margin almost rectangular, posterior angular; abdomen yellow white, obtusely ovate, with a broad light tawny-yellow lateral margin, sutures situated in the centre

towards the apex; legs pale, tawny yellow, very thick; anterior femora angular; tibiæ strong. Length $\frac{1}{2}$.

Communicated by the Rev. L. Jenyns from the Water Rail (Rallus aquaticus).

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15. Docophorus turdi.—*Denny*. (Louse of the Thrush.)

Plate IV. Fig. 5.

Head and thorax chestnut-yellow, the former oblong, much produced in front, with two broad bands; abdomen nearly orbicular, with deep chestnut fasciæ.

Head elongate, anterior portion produced; clypeus broad and emarginate, with a deep acuminate depression ending in a fuscous spot at the vertex, lateral margin sinuated before the eyes, two broad deep chestnut bands extending from the trabeculæ to the occiput; eyes black; antennæ pale, fulvous yellow, the sides of the joints with a dark spot, the second joint the largest; trabeculæ large and strong, rather blunt; prothorax transverse; metathorax the width of the head, triangular; abdomen short, nearly orbicular, yellow white, the first and last segment but one, with the lateral fasciæ of the remainder deep chestnut brown, sutures deeply sinuated posteriorly, and ciliated with yellow hairs; legs fulvous, yellow; anterior femora securiform. Length $\frac{1}{2}$.

In some species the abdominal fasciæ nearly unite in the centre. This species is readily distinguished from D. Merulæ by the greater length of the head, angular metathorax, more slender legs, and generally smaller size. I obtained my specimens from the Song Thrush (Turdus musicus).

16. Docophorus pastoris.—*Denny.* (Louse of the Rose-coloured Pastor.)

Plate IV. Fig. 3.

Head and thorax pale, tawny, the former acuminate with two diagonal liver-coloured bands; abdomen ovate, with pale fuscous fasciæ, margin reflected.

Head pale, tawny, shining and smooth, anteriorly acuminate, posteriorly very broad and rotundate, with two diagonal liver-coloured bands united at the occiput, passing into black at the trabeculæ; antennæ cylindrical, pale ochraceous; trabeculæ long, recurved, and acute; prothorax sub-quadrate, with a black patch on each side; metathorax, broad, lateral margin convex, posterior concave, produced in the centre, margin black; abdomen ovate, milky white, with transverse pale fuscous fasciæ, sutures thickly fringed with long white hairs, lateral margin reflected; legs pale, tawny yellow; femora thick, sub-rotund; tibiæ sub-clavate. Length $\frac{3}{4}$.

The only specimens of this species I have seen were communicated by Wm. Thompson, Esq. from the Rose-coloured Pastor (Pastor roseus), shot near Belfast.

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17. Docophorus celidoxus. (Louse of the Razorbill.)

Plate IV. Fig. 1.

Head and thorax bright chestnut-yellow; clypeus produced, and sub-emarginate; abdominal fasciæ chestnut, acutely triangular, sutures deeply sinuated posteriorly.

Docophorus celidoxus. Burmeister Handbuch ii. pt. ii. p. 426. sp. 15.

Head brilliant chestnut-yellow, with two liver-coloured semicircular transverse bands before the antennæ, and

two chestnut diagonal bands passing to the occiput; clypeus narrow and produced, and sub-emarginate, with a somewhat acuminate depression, terminating posteriorly in a deep chestnut spot, base broad and rotundate; trabeculæ strong, conical, slightly curved; antennæ thick, conical, and yellow; prothorax transverse, with a dark spot on each side; metathorax sub-triangular, deep chestnut, channelled, with a humeral liver-coloured spot; abdomen broad, greyish white, with the first segment, and the transverse lateral fasciæ bright chestnut, the latter acutely triangular, sutures of the posterior segments deeply sinuated in the centre; legs strong and yellow; posterior femora very short, and somewhat angular. Length $\frac{1}{2}$.

This species, which is the constant parasite of the Alca Torda, I have also found upon two nearly allied genera, the Puffin (Fratercula arctica) and the Foolish Guillemot (Uria Troile), upon which birds it has also been found by Mr. Heysham at Carlisle; the brilliant colours which render this species very striking, are occasionally changed to nearly black.

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18. Docophorus auratus? (Louse of the Woodcock.)

Plate IV. Fig. 5.

Head and thorax bright tawny yellow; clypeus narrow; abdomen pale, tawny-yellow white, with a fuscous margin, last segment bright chestnut and rotundate.

Docophorus auratus? Nitzsch Germ. Mag. iii. p. 290; Steph. Cat. pt. ii. p. 331. Burmeister Handbuch ii. pt. ii. p. 426, sp. 18.?——

Head triangular; clypeus produced and narrow, with an acuminate depression, base rotundate, a depressed line between the eyes, and two deep chestnut diagonal bands from the antennæ to the occiput; trabeculæ and antennæ

short and thick; prothorax transverse and small; metathorax triangular, ciliated with stiff hairs; abdomen ovate, pale, fulvous-white, first segment tawny and angular, last chestnut and rotundate, the intermediate seven with a fuscous margin; legs dull yellow, and strong. Length $\frac{1}{2}$.

I have found this species twice upon the Woodcock (Scolopax rusticola), and suspect it is the *Auratus* of Nitzsch and Burmeister. The figure, however, in the posthumous paper of Lyonet, edited by De Hahn in the Memoirs du Museum, vol. 18, is not the *Auratus*, although given as such, but most probably the *Nirmus sellatus*.

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19. Docophorus fringellæ.—*Denny*. (Louse of the Mountain Sparrow.)

Plate III. Fig. 2.

Chestnut yellow, shining, and smooth; head obtusely triangular; abdomen ovate, the lateral fascia short, truncate and confluent, pale, fuscous.

Head obtusely triangular; clypeus produced, emarginate, with a broad depression, and two semicircular lines uniting near the centre, lateral margin concave, with two diagonal fuscous bands passing to the occiput, base rotundate; eyes flat; trabeculæ strong and curved; antennæ rather slender, the first joint long and cylindrical; prothorax transverse; metathorax chestnut, scarcely so wide as the head, lateral margin rotundate, posterior angular and pitchy, ciliated with stiff hairs; abdomen ovate, dirty yellow-white, the lateral fasciæ of the first seven segments pale, fuscous, short, truncate, and confluent; eighth segment fuscous, ninth white, sutures well defined; legs pale chestnut yellow; posterior femora long; tibiæ abruptly clavate. Length $\frac{3}{4}$.

Communicated by Mr. A Clapham, of Potternewton, near Leeds.

20. Docophorus Colymbinus.—*Denny*. (Louse of the Diver.)

Plate VIII. Fig. 8.

Chestnut and shining; head, with two dark semicircular lateral fasciæ; metathorax transversely ovate, with a slight angle behind; abdomen ovate and pitchy.

Head and thorax bright chestnut, or tawny, the former obtusely triangular; clypeus with a somewhat pyriform depression, a pitchy-black impressed semicircular lateral fascia before the antennæ on each side, and two deep chestnut lines extending upwards from the occiput; antennæ and trabeculæ short and thick, pale yellow brown; prothorax small, transverse; metathorax the width of the head, transversely ovate, with an impressed margin, base slightly produced or angular; abdomen ovate, pitchy chestnut, segments nearly equal, with a dark angular spot upon the lateral margin of each, stigmatic apertures deep; legs chestnut; tibiæ with the apex fuscous. Length 1.

This species I have received from Mr. Selby, Mr. Tweedy, and Mr. Heysham, taken on the Red-throated Diver (Colymbus septentrionalis) upon which Bird I have also found it several times; my brother sent it from the Black-throated Diver (C. arcticus), and Mr. Heysham forwarded me a specimen found on the Northern Diver (C. glacialis), which although rather larger than the generality of the specimens occur, and of a bright chestnut, I still consider only a variety, as I have seen specimens taken from the Red-throated Diver quite as bright, although the usual colour of the abdomen is pitchy. Had I an opportunity of examining a series of specimens from the C. glacialis, I might probably have reason to alter my opinion.

21. DOCOPHORUS AQUILINUS.—*Denny*. (Louse of the Eagle.)

Plate II. Fig. 7.

Bright chestnut, smooth and shining; head large, triangular, much produced in front, and deeply notched; abdomen broad, pale, yellow white; lateral fasciæ bright chestnut, and acutely angular.

Head large, triangular, much produced in front, deeply notched, from which proceed an oblong depression to the centre of the vertex, and two dark depressed diagonal bands extending from the anterior lateral margin to the occiput; trabeculæ prominent, pale yellow; antennæ tawny; eyes very small; prothorax bright chestnut, transverse, sub-conical, channelled in the centre; metathorax nearly as wide as the head, sub-triangular, with two depressions at the base, a line down the middle, and two dark humeral spots, posterior margin ciliated; abdomen large, broad, obtusely ovate, each segment with the central portion, pale, yellow-white, the lateral angular fasciæ very acute, deep chestnut, shading into black; legs pale chestnut, rather short and stout. Length 1.

I find this species tolerably common upon the Golden Eagle (Aquila Chrysaëtos), from which bird it has also been sent me by the Rev. William Little of Moffatt, Sir Wm. Jardine, Bart. Mr. Calvert of Leeds, and Mr. G. R. Denny of Norwich, Mr. Thompson of Belfast has sent the same species from the White-tailed Eagle (Aquila albicilla). I have also found it on the Honey Buzzard (Falco apivorus).

** Metathorax terminating posteriorly in an angle; head without dark diagonal lines.

22. DOCOPHORUS CEPHALUS.—*Denny*.

Plate II. Fig. 8.

Deep pitchy chestnut, shining and smooth; head very

wide at the base; abdomen broad, pitchy, with a humeral spot, and the last two segments ferruginous.

Head and thorax bright chestnut, the former very large and triangular, anteriorly much contracted and produced, with a semicircular black line on each side, from the trabeculæ towards the centre, base very broad, convex and rotundate, with two curved depressed lines arising from the occiput; trabeculæ acute; antennæ fulvous, rather short; eyes flat; prothorax very small, but one-third the width of the head, transverse, lateral margin rotundate, centre channelled; metathorax small, acutely angular behind, with a depressed line in the centre, and one on each side; abdomen broad, obtusely oval, depressed in the centre, pitch colour, the last two segments, and a patch on the shoulders, ferruginous, the first seven segments, with a double row of fovea on each side, sutures setigerous; legs ferruginous and thick; anterior femora sub-angular. Length $\frac{3}{4}$.

I have found this species upon the Arctic and Pomarine Skuas Lestris parasiticus and Pomarinus. W. M. Tweedy, Esq. of Truro, and Rev. L. Jenyns have sent it from the Common Sandpiper, Tringa Hypoleucos, and the latter gentleman has also found it upon the Ringed Plover (Charadrius Hiaticula).

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23. Docophorus pallescens.—*Denny.* (Louse of the Titmouse.)

Plate I. Fig. 8.

Pale ochraceous yellow; head large, produced in front; abdomen nearly orbicular, very hairy, segments sinuated posteriorly.

Head large, anterior part narrow, sinuated before the eyes, front deeply emarginate, with an oblong depression, base very broad, quadrate, rotundate; eyes small, promi-

nent, black, situated on the lower angle of the sinus; trabeculæ small, acutely conical; antennæ short, subclavate, the second joint the longest; prothorax narrower than the head, and transverse; metathorax large, as wide as the head; abdomen suborbicular, the first segment the largest, the remainder nearly equal, sutures with numerous long hairs; legs long and thick. Length $\frac{1}{2}$.

Communicated by the Rev. L. Jenyns from the Marsh Titmouse (Parus palustris), and by Mr. G. R. Denny, from the Great Titmouse (Parus major).

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24. Docophorus platygaster.—*Denny.*

Plate II. Fig. 5.

Head cordate, chestnut; abdomen very large, nearly orbicular, flat, lateral fasciæ deep liver-colour, each with two foveolæ.

Head and thorax chestnut, smooth and shining, the former cordate, anteriorly notched and depressed, with a black semicircular transverse band before each eye, base rotundate, with two impressed lines extending upwards from the occiput; eyes flat, fuscous; antennæ short, thick, rather abruptly setaceous, ferruginous yellow; trabeculæ acute; prothorax small, narrow, transverse, channelled in the centre; metathorax not so wide as the head, with two depressions at the base, posterior margin obtusely angular, with a row of setigerous punctures; abdomen yellow white, very broad, nearly orbicular, much contracted at the base, lateral sutures, very deep; lateral fasciæ, dark liver colour, long, conical, each with two foveolæ; last two segments deep chestnut; legs short and thick, pale, ferruginous; anterior femora sub-angular. Length $\frac{3}{4}$.

I have taken this species from the Foolish Guillemot

(Uria Troile), and have received specimens from my brother, taken off the Dotterel (Charadrius morinellus) and Ringed Plover (Charadrius Hiaticula).

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25. Docophorus fusiformis.—*Denny*. (Louse of the Little Stint.)

Plate I. Fig. 2.

Head and thorax bright chestnut, the former large, elongate, sub-cuneiform; abdomen acutely ovate, pitchy brown.

Head large, sub-cuneiform, very much produced in front, deeply notched, with an ovate depression extending to the centre, contracted before the eyes, temporal region convex and large, base rotundate truncate, with two depressed lines proceeding from the occiput; trabeculæ yellow brown, short, and strong; antennæ cylindrical; prothorax transversely conical, base rotundate; metathorax not so wide as the head, anterior margin convex and rotundate, posterior angular, ciliated with stiff hairs; abdomen acutely ovate, pitchy brown, the last two segments ferruginous, segments deeply emarginate; legs long, fulvous yellow. Length $\frac{1}{2}$.

Communicated by Mr. Thompson from Belfast, who took the specimen off the Little Stint (Tringa minuta).

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26. Docophorus canuti.—*Denny*. (Louse of the Knot.)

Plate III. Fig. 5.

Head and thorax chestnut, the former very long cuneiform; abdomen oval, deep liver brown, segments emarginate.

Head bright, chestnut yellow, elongate, cuneiform, lateral margin concave, front with a sublanceolate depression, extending to the centre of the vertex, two transverse deep

liver coloured lines before the eyes, and one semicircular depression at the occiput; eyes obscure; antennæ pale, tawny, and slender; trabeculæ acute; prothorax small, transverse, posterior margin circular, centre channelled; metathorax deep chestnut, posterior margin angular; abdomen rather small, oval, lateral margin serrulate, deep liver brown, last two segments chestnut; legs chestnut; femora thick. Length $\frac{1}{2}$.

For the only specimen of this species which I have seen, I am indebted to the kindness of W. M. Tweedy, Esq. of Truro, who found it upon the Knot (Tringa Canutus).

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27. Docophorus cincli.—*Denny*. (Louse of the Water Ouzel.)

Plate V. Fig. 8.

Pale straw colour, and hairy, head somewhat cordate; metathorax large, posterior margin produced into an angle; abdomen obovate.

Head subcordate, slightly produced in front, with an oval depression, a fuscous spot on each side, and one at the occiput; eyes small and black; antennæ short and thick; trabeculæ slightly curved and conical; prothorax transverse, angles rounded, with an impressed margin line, base concave; metathorax large, pentagonal, basal angle much produced; abdomen short, obovate, first segment large, posterior margin angular, the remainder nearly equal, posterior margin deeply sinuated in the centre, ciliated with long white hairs; legs rather thick. Length $\frac{1}{3}$.

Communicated by Mr. Abraham Clapham of Potternewton, from the Water Ouzel (Cinclus aquaticus), upon which bird I have also found the species myself.

28. Docophorus limosæ.—*Denny*. (Louse of the Godwit.)

Plate IV. Fig. 2.

Head elongate, chestnut; thorax fulvous; abdominal fasciæ pitchy black.

Head chestnut, elongate, triangular; clypeus produced, with two transverse lines united in the centre, base rotundate, with two depressed lines, from the occiput to the antennæ, where they unite with two black transverse bands; antennæ thick, the second joint large, pale ferruginous; trabeculæ conical; prothorax transverse; metathorax small, pentagonal, the centre angle very acute, base and central channel dusky; abdomen obovate, pale, fulvous, hairy, the first and last two segments and lateral obtuse fasciæ of the remainder pitchy black, a chestnut humeral band extending through the first three; legs thick, pale, ferruginous; anterior femora enlarged and angular. Length $\frac{3}{4}$.

Communicated by William Thompson, Esq. from the Bar-tailed Godwit (Limosa rufa), from the Black-tailed Godwit (Limosa melanura), by Mr. G. R. Denny.

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29. Docophorus megacephalus.—*Denny*. (Louse of the Black Guillemot.)

Plate V. Fig. 5.

Pale fulvous; head large, obcordate; abdomen yellow white.

Head and thorax pale, fulvous, yellow, the former very large, obcordate, a diagonal line from the occiput to the antennæ on each side, lateral margin, with a chestnut band, interrupted at the trabeculæ; clypeus small, rotundate; antennæ short, thick, and cylindrical, pale fulvous yellow; trabeculæ conical and strong; prothorax transverse, nearly

as wide as the head; metathorax small, triangular, posterior angle much produced and acute; abdomen oval, pale, yellow white and hairy; legs pale, ferruginous; tibiæ very thick; anterior femora angular. Length $\frac{1}{4}$.

I found a single specimen of this species on the Black Guillemot (Uria Grylle).

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30. Docophorus rostratus. (Louse of the White Owl.)

Plate II. Fig. 4.

Pale chestnut yellow; clypeus elongate, produced, narrow and truncate.

Docophorus rostratus. Burmeister Handbuch ii. pt. ii. p. 427. spe. 20.

Elongate, pale chestnut yellow, smooth and shining; head acuminate; clypeus narrow, much produced and truncate, with an oblong depression near the apex, and a transverse depressed line between the trabeculæ, lateral margin sinuated before the eyes, base rotundate, truncate; eyes prominent and black; trabeculæ acute; antennæ cylindrical, the first joint much the largest; prothorax transversely oval; metathorax the width of the head, lateral margins rotundate, base acutely angular, ciliated with pale yellow hairs; abdomen elongate ovate, milky white, the first, last two, and the lateral fascia of the six intermediate chestnut yellow; legs long, rather slender, especially the two posterior pair; femora of the first and second pair enlarged. Length 1.

Found upon the White Owl (Strix flammea), and communicated by the Rev. Leonard Jenyns and my brother.

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31. Docophorus pari.—*Denny.* (Louse of the Titmouse.)

Plate VI. Fig. 6.

Pale fulvous, shining and hairy; abdomen with a dull chestnut margin and pitchy spots.

Head sub-acuminate; clypeus produced, two semicircular transverse lines uniting in the centre, two diagonal ones from the antennæ to the occiput, base large and rotundate, a pitchy spot on each lateral margin before the trabeculæ; eyes small, fuscous; antennæ filiform; trabeculæ acute; prothorax small, transverse, lateral angles rounded; metathorax triangular, lateral angles deep pitch colour, posterior angles acute; abdomen elliptical, pale fulvous, central portion and margin dull chestnut, segments nearly equal with a pitchy spot on each side of all except the last two; legs pale yellow; extremity of the femora dusky. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns from the Long-tailed Titmouse (Parus caudatus); I have taken it myself from the Cole Titmouse (Parus ater), and the Blue Titmouse (Parus cœruleus).

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32. Docophorus humeralis.—*Denny*. (Louse of the Curlew.)

Plate V. Fig. 7.

Head large, triangular, brilliant chestnut; abdomen yellow white, with the lateral fasciæ acutely angular and pitchy black, the first three with a chestnut humeral patch.

Head and thorax brilliant chestnut, shining and smooth, the former large, triangular, anterior part with an angular depression extending down to the centre of the vertex, two dark liver-colour transverse fasciæ before the eyes, and a somewhat lyre-shaped depression at the base; occiput slightly trilobate; antennæ long, slender, pale yellow, the second joint very long; trabeculæ acute, conical; prothorax small, transverse, channelled, the posterior margin semicircular; metathorax large, posterior margin acutely angular, ciliated, with numerous yellow hairs, anterior portion shaded with

black; abdomen large, obtusely ovate, pale yellow, white and hairy, the first segment angular and well defined, lateral fasciæ and terminal segment pitchy black, the first three with a bright chestnut humeral patch; legs thick, pale yellow. Length 1.

Although this very beautiful species is a common Parasite on the Curlew (Numenius arquata), from which bird I first received it through Mr. Thompson of Belfast, I have also found it upon the Gannet, Whimbrel, and Foolish Guillemot, though sparingly. Varieties are observed in which the lateral fasciæ were very narrow, leaving a broad sutural band of white, and others in which they were of a bright chestnut.

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33. Docophorus lari. (Louse of the Gull.)

Plate V. Fig. 9.

Bright chestnut, smooth and shining; abdominal fasciæ pitchy black and confluent.

Pediculus Lari? Fabr. Faun. Grœn. p. 219. no. 189?

Head elongate, triangular, clypeus broad, nearly emarginate, pale ochraceous, two semicircular impressed lines uniting in the centre, and two transverse deep pitchy bands, base rotundate; eyes obscure; trabeculæ conical and strong; antennæ chestnut; prothorax transverse, channelled; metathorax not so wide as the head, triangular, with a depression at the base; abdomen ovate, dull yellow white, the first and last two segments, with the lateral fascia on the remainder, deep pitchy black, the latter long and conical, with two deep foveæ, anterior sutures angular and produced, posterior sinuated; legs dark chestnut; extremity of the femora with a dark ring. Length $\frac{3}{4}$.

This species appears common to nearly all our Gulls.

ROYAL VETERINARY COLLEGE FOUNDED 1791

Mr. Heysham sent it to me from the Larus islandicus, canus, and tridactylus; Rev. L. Jenyns from the Larus ridibundus, and Mr. Thompson from the Larus rissa, marinus, argentatus, and ridibundus,—and from several of the above species of Gulls I have taken it myself. The female has the abdomen much broader than the male and more rotund. This species is very variable in size, and also in the extent of the lateral abdominal fasciæ, some specimens exhibiting scarcely any of the pale discoid space.

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34. Docophorus conicus.—*Denny.* (Louse of the Golden Plover.)

Plate V. Fig. 2.

Pale fulvous yellow; head large, sub-conical; abdomen elliptical.

Head chestnut, large and conical; clypeus produced, a transverse depressed line between the trabeculæ, base rotundate; eyes small, black; trabeculæ acute and strong; antennæ short, thick, filiform; prothorax transverse, channelled, posterior margin rotundate; metathorax depressed at each shoulder, posterior margin subangular, ciliated with stiff hairs; abdomen large, acutely elliptical; legs short, chestnut; femur with a dark annulus. Length $\frac{1}{2}$.

I have seen but a single specimen of this species which I took from the Golden Plover (Charadrius pluvialis).

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35. Docophorus serrilimbus. (Louse of the Wryneck.)

Plate VII. Fig. 9.

Pale fulvous yellow; head elongate, triangular, lateral margin blackish brown.

Docophorus serrilimbus. Burmeister Handbuch ii. pt. ii. p. 427. spe. 23.

Head elongate, triangular; clypeus much produced and truncate, with an acuminate depression and two semicir-

cular lines uniting in the centre, a transverse interrupted line between the eyes, lateral margin with a black band; antennæ long, slender; trabeculæ prominent and acute; prothorax quadrate; metathorax pentagonal, posterior margin ciliated with strong hairs; abdomen oblong, club-shaped, yellow white, sutures very distinct, lateral margin of each segment, together with that of the thorax, blackish, shading into deep chestnut, sutural margin of the posterior segments sinuated; legs stout, pale fulvous. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns, Mr. Thompson, and Mr. Doubleday, from the Wryneck (Yunx torquilla).

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36. Docophorus reguli.—*Denny*. (Louse of the Golden-crested Regulus.)

Plate VI. Fig. 4.

Fulvous yellow; head triangular; abdomen with the lateral fascia bright fulvous, terminating in pitchy chestnut.

Head and thorax tawny yellow, the former triangular; clypeus emarginate, with an oblong ovate depression, and two diagonal lines from the antennæ to the occiput, base broad and truncate; eyes black; antennæ yellow; trabeculæ small; prothorax transverse, lateral and posterior margins rotundate; metathorax not so wide as the head, sub-triangular, posterior margin ciliated with stiff hairs; abdomen ovate, dusky white, segments nearly equal, the lateral fascia deep fulvous, shading into pitchy chestnut; legs pale fulvous; femur thick and sub-angular.

The first specimen of this species, which I had an opportunity of examining, was in the possession of the Rev. L. Jenyns, since then I have obtained others, all of which were from the Golden-crested Regulus (Regulus aurocapillus). The colour and extent of the abdominal fasciæ is subject to great variation.

37. Docophorus upupæ.—*Denny*. (Louse of the Hoopoe.)

Plate VIII. Fig. 1.

Elongate, chestnut and shining; head with a dark angular lateral patch before the eyes; abdomen with the sutures and stigmatic fovea pale ochraceous.

Head subtriangular; clypeus produced, acute, and pale, lateral margin with a dark angular patch before the eyes, terminating in an impressed line at the occiput, base large, and rotundate; trabeculæ small and acute; antennæ slender, pale fulvous; prothorax small, quadrate; metathorax subconical, as wide as the head, lateral margin straight, angles acute, base produced into a very acute angle, slightly channelled; abdomen elongate ovate, the sutures and stigmatic areola pale ochraceous, lateral margin pitchy black, segments nearly equal and ciliated; legs pale chestnut; anterior femora thick, with a fuscous patch at the apex; tibiæ long, slender. Length 1.

I am indebted to W. M. Tweedy, Esq. of Truro, for the first examples of this rare species, since which T. C. Heysham, Esq. forwarded me another specimen taken from a Hoopoe (Upupa Epops) shot near Carlisle.

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* * * Metathorax terminating posteriorly in a semicircle, or abruptly truncate.

38. Docophorus ceblebrachys. (Louse of the Snowy Owl.)

Plate I. Fig. 3.

Shining and smooth; head large, cordate, bright chestnut; abdomen white, with numerous white hairs, lateral margin with liver-coloured transverse bands; legs bright ochreous yellow.

Docophorus ceblebrachys? Nitzsch's MSS. vol. iv. p. 197.

Head and thorax bright chestnut yellow, the former very

large, cordate, with two diagonal liver-coloured fasciæ, extending from the front to the occiput, base rotundate, anterior part with a broad depression, terminating in a point near the centre; eyes small, fuscous; antennæ pale yellow, very short, filiform; trabeculæ short, conical, and strong; prothorax transverse, anterior and posterior margin semicircular, slightly channelled; metathorax transverse, nearly the width of the head, lateral margin rotundate, anterior part depressed in the centre; abdomen white, broad, ovate, the first seven segments with a transverse liver-coloured tongue-shaped fascia on each side, the eighth chestnut, ninth white, the spiracular apertures sometimes nearly white; legs bright chestnut yellow, long, very thick; the extremities of the femora and tibiæ with a dark band. Length 1.

On the 13th of February, 1837, a fine male specimen of the Snowy Owl (Surnia nyctea) was shot on Barlow Moor, near Selby, in the West Riding of Yorkshire, which came into the possession of my friend, Mr. Abraham Clapham of Potternewton, upon which he found an abundance of this species of Docophorus. I have also received specimens taken from the same bird by Mr. Selby at Twizell House, and from Mr. Thompson of Belfast. I should have had no hesitation in pronouncing this insect the *Hæmatopus* of Scopoli, which he says is found upon the Snowy Owl, and which Nitzsch quotes as synonymous with his *Platyrhynchus*, found by him, however, only upon the Goshawk (Astur palumbarius). But Dr. Burmeister, to whom I am indebted for much valuable information, informs me that the species found on the Nyctea was named by Nitzsch *Ceblebrachys*. I therefore quote this specific name, doubting not that our insects are identical; as, however, I have never seen the *Platyrhynchus*, and the species must approach so very near, I shall feel under a great obligation to any friend who can

furnish me with a specimen. The size and figure of the lateral fasciæ on the abdomen are very variable. In some specimens they are nearly united, while in others the sutural white lines are very broad; again, the metathorax, which is generally uniform in colour with the prothorax, is sometimes very dark and obscure.

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39. Docophorus platyrhynchus. (Louse of the Goshawk.)

Abdomine ovato albo, margine pedibusque rubris.

Docophorus platyrhynchus, Nitzsch. Germ. Mag. iii. p. 290. Steph. Cat. pt. ii. p. 331. Children app. to Back's Land Exp. p. 536.—Pediculus Hæmatopus, Scop. Ent. Carnoil. p. 381, n. 1035.—Pediculus Strigis Fabr. Ant. 343. Syst. Ent. 806. 12. Syst. Inst. ii. p. 478. 14. Faun. Grœnl. p. 216. 184. Mull. Prodr. 2189. Atl. Dan. 699, tab. xxx. Stew. Ele. Nat. Hist. ii. p. 298. Turt. iii. p. 279.

Caput subcordatum, obtusum, antice declive nudum, splendens spadiceo fulvum; antennæ mobiles; capiti concolores; abdomen linea dorsali nigri utrinque.

Although I have never seen this species, I consider it ought to be enumerated, and have therefore given Scopoli's original description for reasons to be seen hereafter. If it is really distinct from the preceding, it will most probably be a British species, as the Astur Palumbarius belongs to our Fauna. But not a little obscurity hangs over it, and diversity of opinion exists; Dr. Burmeister says it is found *only* on the Goshawk, while Scopoli, the Fabriciuses, Muller, Stewart, Stephens, and Turton quotes it as infesting Owls. Now Scopoli's description given above, agrees in every respect with the preceding species, excepting the *abdomine linea dorsali nigri utrinque*, and the specific name of Nitzsch's would suit that species admirably, which has a broader front to the head than any other species I am ac-

quainted with. But as I feel great delicacy in differing from such high authority as that of Dr. Burmeister, I have thought it better to place it as the next species to *Ceblebrachys*. Still the question arises, what is the *Pediculus Strigis* of authors, if not the same as *platyrhynchus?* is it identical with the *Docophorus Cursor*, which is also found on Owls, and to which the "Abdomine ovato albo, margine pedibusque rubris," of Fabricius, would apply very well? But here again Dr. Burmeister, the only author who enumerates this species, makes no reference to the synonyms of preceding writers, with which he must necessarily be familiar, and which would seem to imply that it was not *their Strigis*.

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40. Docophorus cygni.—*Denny*. (Louse of the Swan.)

Plate I. Fig. 1.

Head, thorax, and legs bright chestnut, smooth and shining; abdomen broad, ovate, white, the first segment and a humeral spot on the second and third chestnut, the remainder with abbreviated dark liver-coloured fasciæ on each side.

Pulex Cygni secundi generis, Redi Expe. pl. ix. fig. inf. Albin Aran. p. 76. tab. 48.—Docophorus icterodes, Steph. Cat. pt. ii. p. 331 ?

Head obtusely conical, anterior part slightly emarginate, with two short semicircular lines uniting in the centre, a dark liver-coloured cuneiform transverse band on each side before the antennæ, from which passes a straight band of the same colour to the occiput; eyes small; antennæ pale chestnut, short and thick, the first and second joints large and thick, the remainder short, nearly equal; trabeculæ rather small, apex slightly recurved; prothorax short, transverse, channelled in the centre; metathorax as wide as the head, transverse, posterior margin circular, lateral margin produced

and angular, with two basal and two lateral dark spots; abdomen large, ovate, more than twice the width of the head, the first segment semicircular and chestnut, the second to the seventh with broad liver-coloured lateral fasciæ, the second and third with a chestnut humeral spot on each side, eighth deep liver colour, ninth small and white; legs very strong and thick, with a dark band at the apex of the femora and tibiæ. Length $\frac{1}{2}$.

For specimens of this elegant species I am indebted to Mr. Thompson, who took them from the Cygnus Bewickii at Belfast. I have also received it both from the same species of bird killed near Carlisle, and from the Bean Goose, through the kindness of T. C. Heysham, Esq. The lateral fasciæ are variable both as to diameter and extent, as well as intensity of colour.

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41. Docophorus testudinarius. (Louse of the Curlew.)

Plate I. Fig. 6.

Bright fulvous, shining and hairy; abdomen with the centre and margin pitchy brown.

Nirmus testudinarius? Children's Appen. to Back's Land Exp. p. 538. sp. 6.

Bright fulvous, shining and hairy; head obtusely subtriangular in the male, longer and narrower in the female, anterior extremity slightly emarginate, with sub-quadrate depression, lateral margin with a somewhat hook-shaped pitchy band on each, terminating at the occiput, and a small spot below the eyes; base wide, rotundate and convex; eyes small and prominent; trabeculæ strong, conical, and obtuse; antennæ slender, pale fulvous, the second joint much the largest; prothorax small, transverse, posterior angles rounded, centre and lateral margin deep brown; metathorax as wide as the head, lateral margin somewhat angular, posterior semicircular, with a humeral pitchy spot on

each side ; abdomen broad and obtusely ovate in the male, oblong elliptical in the female, each segment, excepting the first and last, with a deep pitchy chestnut margin, the dorsal portion of the first eight of the same colour, leaving the sutures and a broad band down each bright fulvous, last segment chestnut in the male, obscure in the female ; anus with numerous long hairs ; legs thick and strong, pale ochraceous. Length, male 1, female $1\frac{1}{4}$.

Communicated by Mr. Thompson from Belfast, and Mr Heysham from Carlisle.

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42. Docophorus latifrons. (Louse of the Cuckow.)

Plate I. Fig. 4.

Head and thorax bright ferruginous, the anterior part of the former very broad, and deeply emarginate ; abdomen oblong, ovate, white, with bright ferruginous fasciæ, shading internally into a deep chestnut or liver brown.

Docophorus latifrons. Nitzsch. Germ. Mag. iii. p. 290. Steph. Cat. pt. ii. p. 331.—Pediculus Cuculi. Fabr. Syst. Ent. 807. 17. Syst. Inst. ii. 479. 20.—Pediculus fasciatus. Scop. Ent. Carniol. 383. n. 1040.

Ferruginous, oblong, depressed and shining, with white hairs ; head large, sub-triangular, the anterior part very broad and retuse, with a semi-oval depression, and two dark chestnut lines uniting in the centre, and two broad diagonal bands from the antennæ to the occiput ; eyes very small, fuscous ; trabeculæ thick and strong ; antennæ rather short, pale ochraceous, the first joint short and thick, the second much longer, cylindrical, the remainder short and equal ; prothorax about half the width of the head, sub-conical, sides deeply margined ; metathorax large transverse, sides rotundate, base the broadest and truncate, ciliated with stiff hairs, centre channelled ; abdomen oblong

ovate in the female, white, the lateral fasciæ bright ferruginous, shading into deep pitch or liver colour, in the male nearly orbicular, the fasciæ longer and converging, so as frequently to unite in the centre; legs pale, ferruginous, long, thick; ungues darker; anterior femora large and angular, posterior curved internally, concave. Length $\frac{2}{3}$ to 1.

This species, which I find common on the Cuckow (Cuculus canorus), I have received from Mr. Tweedy of Truro, and Mr. Doubleday of Epping; the latter also sent me the same species taken by him from a Wryneck (Yunx torquilla).

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43. Docophorus fuscicollis. (Louse of the Cinereous Shrike.)

Plate I. Fig. 7.

Head and thorax dull chestnut, smooth and shining, the former obtusely triangular, anterior part with an acuminate depression; abdomen greyish white, lateral fasciæ liver brown.

Docophorus fuscicollis. Burmeister Handbuch ii. pt. ii. p. 425. sp. 10.

Head obtusely triangular, anteriorly deeply notched, with a large acuminate depression, bordered with pitchy black, and two broad diagonal bands, from the trabeculæ to the occiput, where they are united by a transverse band; trabeculæ large, strong, and curved; antennæ pale chestnut; eyes flat, obscure, pale fulvous; prothorax about half the width of the head, nearly quadrate, lateral margin dark pitch colour, centre depressed, posterior margin rotundate; metathorax the width of the head, lateral margin nearly rectangular, posterior semicircular, margined with pitchy black; abdomen ovate, greyish white, the first seven segments with deep liver-coloured lateral fasciæ, the eighth

with a transverse pitchy band, ninth greyish white; legs long, stout, dull brown; femora banded at the apex with black. Length $\frac{3}{4}$.

The only specimens I have seen of this species were communicated by the Rev. L. Jenyns from Cambridgeshire, and Mr. Heysham from Carlisle, taken off the Cinereous Shrike (Lanius excubitor). Dr. Burmeister states it is also found upon the Jay (Garrulus glandarius).

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44. Docophorus chrysophthalmi.—*Denny*. (Louse of the Golden-Eye Garrot.)

Plate III. Fig. 3.

Head and thorax brilliant chestnut, the former large, with two broad diagonal clavated bands; abdomen broad, yellow-white, the lateral fasciæ tongue-shaped, wavy, bright chestnut, terminating internally in a blackish liver colour; antennæ with the second joint internally produced.

Head large, triangular, anteriorly deeply notched and pale, with an oblong somewhat pear-shaped depression, two dark diagonal bands extending from the occiput to the lateral margin, where they become considerably enlarged and cuneiform; antennæ rather short and thick, the second joint much the longest, and slightly produced beneath; trabeculæ short and conical; prothorax transversely conical; metathorax transverse, channelled in the centre, posterior margin semicircular, lateral margin rotundate, with a dark spot; abdomen broad, ovate, pale yellow-white, the first seven segments with a tongue-shaped wavy transverse fascia on each side, bright chestnut, shading internally into blackish liver colour, last two segments chestnut; legs thick, pale, tawny-yellow; anterior femora angulated; tibiæ abruptly clavate, with two long spines on the base; tarsi very short. Length 1.

The only specimens of this species which have come under my notice were kindly forwarded by Prideaux John Selby, Esq. of Twizell House, Northumberland, who found them upon the Golden-Eye Garrot (Clangula chrysophthalmos).

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45. Docophorus platalEæ.—*Denny*. (Louse of the Spoonbill.)

Plate IV. Fig. 9.

Head and thorax deep chestnut, the former broad, with two liver-coloured bands; abdomen nearly orbicular, with elongate liver-coloured fasciæ.

Head chestnut, obtusely triangular, the anterior part truncate, with an oblong depression, and two semicircular transverse lines uniting in the centre, and two deep liver-coloured spots before the antennæ, from which pass nearly perpendicular bands, increasing in width to the occiput, base very broad, convex, and rotundate; eyes small, black; trabeculæ very small; antennæ pale, tawny-yellow, long and slender, the first joint large and thick, the second long sub-clavate, the remainder gradually decreasing; prothorax very short and transverse, slightly channelled; metathorax large, nearly the width of the head, very convex towards the posterior margin, lateral margin rotundate, base transversely truncate, ciliated with numerous yellow-white hairs; abdomen nearly orbicular, pale yellow-white, the first eight segments with elongate, wavy, acutely triangular, lateral fasciæ, of a fine deep liver-colour, shading internally into chestnut; legs pale chestnut, and rather thick. Length $1\frac{1}{4}$.

I found an abundance of this insect upon a specimen of the White Spoonbill (Platalea leucorodia), which was killed at Yarmouth in Norfolk in 1829. The abdominal fasciæ

vary very considerably both in colour and extent. I have seen some specimens in which they extended nearly across the medial line, so as to obliterate almost entirely the central white space.

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46. Docophorus meropis.—*Denny*. (Louse of the Bee-eater.)

Plate IV. Fig. 4.

Ferruginous, smooth, and shining; head triangular; clypeus deeply emarginate; abdomen dull white.

Head obtusely triangular, anterior somewhat channelled; clypeus deeply emarginate, posterior convex and rotundate, two diagonal impressed lines from the eyes to the occiput; trabeculæ acutely conical, placed very near the anterior portion; antennæ slender; eyes black and flat; prothorax conical and narrow; metathorax transverse and rotundate; abdomen obovate, dull white and hairy, transverse, lateral fasciæ ferruginous, acutely triangular; legs pale, tawny, rather thick. Length $\frac{1}{2}$.

For the only specimen I have seen of this species, I am indebted to Wm. Thompson, Esq. who took it upon a Bee-eater (Merops Apiaster), which had been shot near Belfast.

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47. Docophorus cursor. (Louse of the Short and Long-eared Owls.)

Plate II. Fig. 1.

Brilliant chestnut-yellow, with numerous white hairs; head obtusely triangular; clypeus truncate; abdominal fasciæ obtusely triangular.

Docophorus cursor. Burmeister Handbuch ii. pt. ii. p. 426. spe. 14.

Head obtusely triangular; clypeus broad, truncate, with

an oval depression, and two semicircular lines uniting in the centre of the vertex, and two diagonal deep chestnut bands from the antennæ to the occiput; eyes prominent, small, and fuscous; trabeculæ recurved, conical, and acute; antennæ fulvous-yellow, thick, and cylindrical; prothorax transverse, channelled; metathorax transverse, lateral margins rotundate, posterior nearly circular; abdomen elongate-ovate, milky white, the first eight segments with an obtusely triangular lateral fascia on each side, bearing two foveola; sutures with numerous white hairs; legs tawny yellow, thick and strong; anterior femora angular, posterior curved. Length $\frac{3}{4}$ to 1.

I have taken this species upon the Long-eared Owl (Otus vulgaris), and received it from the Rev. L. Jenyns, and my brother, who found it upon the Short-eared Owl (Otus Brachyotos). I should have considered this species as the *Pediculus Strigis* of Fabr. Stew. &c. had not Dr. Burmeister remained silent upon the subject, and makes no reference to preceding writers for synonyms, while Mr. Stephens in his Catalogue of British Insects quotes the *P. Strigis*, as synonymous with Nitzsch's *Platyrhynchus*, and Scopoli's *Hæmatopus*, vide page 95.

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48. Docophorus icterodes. (Louse of the Duck.)

Plate V. Fig. 11.

Bright, ferruginous; head oblong; clypeus broad, subtruncate; abdomen white, lateral fasciæ confluent, with a fuscous spot on the sides.

Docophorus icterodes. Nitzsch. Germ. Mag. iii. 290. Burmeister Handbuch ii. pt. ii. p. 424. spe. 4. Steph. Cat. pt. ii. p. 331. De Geer. Mem. vii. pl. 4. fig. 14.—Pediculus dentatus. Scop. Ent. Carniolica, 383. n. 1042?

Head oblong; clypeus broad and produced, subtruncate,

with an interrupted transverse impressed line, two dark chestnut, semicircular, transverse fasciæ before the antennæ, united with two bands passing to the occiput; trabeculæ and antennæ short, the second joint the longest; prothorax sub-conical; metathorax transverse, slightly channelled, with a deep chestnut spot on each lateral margin; base semicircular, ciliated with strong white hairs; abdomen obtusely ovate, white, the first and last segments, together with the lateral transverse fasciæ, deep ferruginous, the latter confluent and abruptly truncate, with a dark chestnut spot on the lateral margin; legs tawny yellow. Length $\frac{1}{2}$.

A common parasite on Ducks. I have found it on the Mallard (Anas Boschas), Wigeon (Mareca penelope), Scaup Pochard (Fuligula Marila), common Pochard (Fuligula ferina), Shoveller (Anas clypeata); the Rev. L. Jenyns sent it me from the Goosander (Mergus merganser), White-fronted Goose (Anas albifrons), upon the Scaup and Shoveller; it has also been found by Mr. Heysham at Carlisle; Mr. Thompson has sent it from Belfast, where he found it upon the Teal (Anas crecca); Dr. Burmeister states that it is also found upon the Smew (Mergus albellus).

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49. Docophorus thalassidromæ.—*Denny.* (Louse of the Stormy Petrel.)

Plate II. Fig. 6.

Head and thorax tawny yellow; abdominal fasciæ deep pitchy black, with two large foveola.

Elongate, smooth and shining; head sub-triangular; clypeus narrow and produced, with an oblong depression, two deep liver-coloured transverse fasciæ before the antennæ, uniting in the centre, from which pass two perpendicular impressed lines to the occiput, (which are sometimes rather

darker), base large and rotund; occiput sub-truncate; trabeculæ acute; antennæ pale yellow; prothorax small, transverse, channelled in the centre; metathorax as wide as the head, lateral margin rotundate, posterior semicircular, deeply channelled, shaded on the sides with chestnut; abdomen elongate ovate, pale tawny white, the sutures deeply impressed, posteriorly sinuated, lateral transverse fasciæ pitchy black, with two large foveolæ; legs thick, pitchy brown. Length $\frac{3}{4}$.

Communicated by W. M. Tweedy, Esq. of Truro, from the Stormy Petrel (Thalassidroma pelagica), to whom I am indebted for much valuable assistance.

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50. Docophorus passerinus.—*Denny.* (Louse of the Wag-tail.)

Plate V. Fig. 12.

Head and thorax chestnut, yellow, the former small, sub-pyriform; abdomen acuminate; lateral fasciæ deep chestnut.

Head sub-pyriform; clypeus slightly emarginate, with an acuminate depression, two deep liver-coloured bands from the antennæ to the occiput, contracted in the centre; trabeculæ strong and curved; antennæ short; prothorax small, transverse, chestnut; metathorax small, margins deep chestnut, base semicircular, ciliated with stiff white hairs; abdomen acuminate, dull yellow white, the lateral transverse fasciæ and last two segments deep chestnut; legs thick and strong, tawny yellow; anterior femora angulate. Length $\frac{1}{2}$.

Communicated by the Rev. L. Jenyns from the Pied Wagtail (Motacilla alba), by Mr. G. R. Denny from the Yellow Wagtail (Motacilla flava); I once took a specimen from the Sedge Warbler (Sylvia Phragmitis).

51. Docophorus tricolor. (Louse of the Black Stork.)

Plate VI. Fig. 9.

Head, thorax, and legs dark pitchy chestnut; abdomen white, the lateral fasciæ deep liver colour.

Docophorus tricolor. Burmeister Handbuch ii. pt. ii. p. 424. spe. 3. Nitzsch Germ. Mag. iii. p. 290. spe. 12.

Head triangular; clypeus truncate, base rotundate, with a transverse impressed line before the trabeculæ, and two dark diagonal narrow bands from the occiput to the antennæ, eyes black; trabeculæ short, thick, and conical; antennæ slender, filiform, pale chestnut; prothorax transverse, quadrate; metathorax not so wide as the head, sub-conical, channelled in the centre, base truncate, and ciliated with hairs; abdomen oblong, club-shaped and yellow, white and hairy, the lateral transverse fasciæ short and rotundate, deep liver-colour, each with two foveola; legs chestnut, long and slender; anterior femora large and sub-angular. Length ♂ ¾ ♀ 1.

For the opportunity of figuring this species from the Ciconia nigra, I have to acknowledge the kind assistance of Professor Burmeister of Halle, who, with a liberality rising superior to the dictates of self-interest, and which only those who love science for its own sake will put in practice, forwarded me specimens of several species, which I could not obtain elsewhere. When I state that Dr. Burmeister is himself engaged upon a work on Parasitic Insects, with figures of the species, his disinterested conduct requires no comment.

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52 Docophorus incompletus. (Louse of the White Stork.)

Plate VI. Fig. 5.

Fulvous-yellow, shining, hairy and elongate; abdomen

with the lateral and sutural margins darker; ungues chestnut.

Docophorus incompletus. Nitzsch. Germ. Mag. iii. p. 290. spe. 13.

Head large, triangular; occiput concave, from which passes two diagonal curved lines to the antennæ; eyes black; antennæ short, thick, and cylindrical; trabeculæ short and conical; prothorax transverse, posterior margin semicircular; metathorax the width of the head, broadest at the base, lateral margin rotundate, posterior truncate, slightly sinuated in the centre; abdomen cylindrical, apex ovate, first segment deeply sinuated with a fuscous spot on each side, lateral margin darker; legs pale tawny yellow, rather thick; anterior femora very large; ungues chestnut. Length 1 to $\frac{1}{4}$.

I suspect this to be the *incompletus* of Nitzsch and Burmeister. I found it upon a specimen of the White Stork (Ciconia alba), which was killed at Yarmouth in Norfolk in 1829.

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53. Docophorus merulæ.—*Denny*. (Louse of the Blackbird.)

Plate III. Fig. 1.

Bright chestnut-yellow; abdominal fasciæ short; legs thick, superior margin dark.

Head obtusely triangular; clypeus broad, with an ovate depression, lateral margin deeply sinuated, with two deep chestnut diagonal bands extending to the occiput, base broad and rotundate; eyes very prominent; trabeculæ strong and conical; antennæ pale fulvous yellow, filiform; prothorax small; metathorax the width of the head, lateral margin nearly rectangular, posterior semicircular; abdomen obtuse ovate, yellow-white and hairy, the lateral transverse fasciæ short, deep chestnut, internally pitchy, sutures sinuated pos-

teriorly; legs pale fulvous yellow, very thick, superior margin chestnut; posterior femora angulate beneath. Length $\frac{3}{4}$.

This species has been found on the Blackbird (Turdus merula), and communicated by Sir Wm. Jardine, Bart., Mr. Selby, and Rev. L. Jenyns; the latter gentleman has also taken it from the Fieldfare (Turdus pilaris), and I once found a specimen on the Ring Ouzel (Turdus torquatus). But from the circumstance of its being found on the Blackbird in three different and widely separated parts of the kingdom, I should consider that Bird its proper nidus.

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54. Docophorus modularis.—*Denny*. (Louse of the Hedge Accentor.)

Plate III. Fig. 3.

Pale chestnut-yellow; head large, triangular; thorax dull chestnut, with a black margin; abdomen large, with the transverse fasciæ long, strap-shaped and truncate.

Head pale chestnut-yellow, triangular, much elevated in centre; clypeus produced with an acuminate depression, the diagonal bands bright chestnut, terminating at each extremity in a black angular space, base transverse, truncate; eyes flat; antennæ pale fulvous yellow, the second joint much the longest; trabeculæ thick, conical; prothorax quadrate, lateral margins nearly black; metathorax small, posterior margin circular, ciliated with stiff hairs; abdomen ovate, yellow white, transverse lateral fasciæ and last two segments fuscous, the former long, strap-shaped, and truncate; legs pale chestnut; tibiæ sub-clavate, with a black spot at the apex; posterior femora thick. Length ♂ $\frac{1}{2}$ ♀ $\frac{3}{4}$.

The only specimens of this species which I have seen were forwarded by my brother from Norwich, who found them on the Hedge accentor (Accentor modularis).

55. Docophorus rubeculæ. (Louse of the Redbreast.)

Plate II. Fig. 2.

Elongate; head and thorax chestnut-yellow, margin of the latter deep liver-colour; abdominal fasciæ deep chestnut, short and subtruncate; last three joints of the antennæ chestnut.

Nirmus Rubeculæ.—Leach MSS. ?

Head triangular; clypeus produced, entire, with two semicircular lines uniting and extending to the centre of the vertex, two diagonal liver-coloured bands; trabeculæ large, abruptly acuminate; antennæ long, slender, pale fulvous yellow, the last three joints chestnut; prothorax long, subconical; base rotundate, lateral margin pitchy black; metathorax the width of the head, transverse, lateral margin convex, base sub-truncate; abdomen elongate ovate, white and hairy, the lateral fasciæ very short, sub-truncate or obtuse, deep chestnut, stigmatic apertures white; legs pale chestnut, thick, apex of tibiæ dusky; anterior femora securiform. Length $\frac{3}{4}$.

I have found this species on the Red-breast (Sylvia Rubecula), and Rev. L. Jenyns has sent it to me from the Chaffinch (Fringilla cœlebs), and the Snow Bunting (Emberiza nivalis).

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56. Docophorus platystomus. (Louse of the Buzzard.)

Plate IV. Fig. 7.

Bright chestnut; head large; clypeus broad, deeply emarginate; abdominal fasciæ chestnut and acute; apices dusky.

Docophorus platystomus. Burmeister Handbuch ii. pt. ii. p. 426. spe. 13.

Head and thorax bright chestnut, shining and smooth, the former large, sub-triangular; clypeus broad, deeply

emarginate, with a quadrangular depression and two chestnut curved lines uniting in a fuscous spot near the vertex, lateral margin sinuated with two broad diagonal liver-coloured bands to the occiput; eyes prominent; trabeculæ strong, conical; antennæ pale fulvous yellow; prothorax sub-conical; mesothorax transverse, posterior margin rotundate; abdomen broad, nearly orbicular, white, flat, segments nearly equal; lateral fasciæ acutely conical, slightly emarginate, bright chestnut, terminating internally in deep pitchy brown; legs bright fulvous yellow and stout; the apex of the femora and extremities of the tibiæ chestnut; anterior femora sub-angular. Length 1.

Communicated from the Common Buzzard (Buteo vulgaris), by Rev. L. Jenyns, and Mr. Heysham; from the Rough-legged Buzzard by Mr. Henry Doubleday, upon which bird I have taken it myself.

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57. Docophorus nisi.—*Denny*. (Louse of the Sparrow-Hawk.)

Plate III. Fig. 11.

Bright fulvous-yellow; clypeus narrow and deeply emarginate; abdominal fasciæ bright fulvous, long and acute.

Head long, acuminate, bright fulvous-yellow; clypeus produced, deeply emarginate, with an oblong or pyriform depression ending in a deep chestnut patch, diagonal bands deep chestnut; trabeculæ conical and strong; antennæ pale yellow, the second joint the largest; eyes flat, obscure; prothorax sub-conical, slightly channelled; metathorax transverse, less in width than the head, posterior margin slightly produced and convex, with deep chestnut humeral markings; abdomen ovate, yellow white, the lateral fasciæ long, very acute, bright fulvous-yellow, posterior segments with the

sutures deeply sinuated; legs thick; tibiæ with a dark band at the apex; anterior femora enlarged. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns and Mr. G. R. Denny from the Sparrow Hawk (Accipiter nisus). Although this species resembles the preceding in several respects, its smaller size, narrow clypeus, and pale fulvous-yellow lateral fascia, sufficiently distinguishes it; add to which, I have not found this species infesting the Buzzards, or the D. platystomus the Sparrow-Hawk.

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58. Docophorus Bassanæ.—*Denny*. (Louse of the Gannet.)

Plate VI. Fig. 3.—Plate VII. Fig. 3.

Elongate, deep chestnut; abdomen pale fulvous, with the lateral fasciæ deep liver-colour and confluent.

Pediculus Bassani? Muller's Prodr. 2193.—Fabr. Faun. Grœn. 218, 188.—Grœnl. Kuksub. Koma.

Head and thorax deep chestnut, the former obtusely triangular; clypeus pale, slightly produced and curved, black band extending from the anterior part of the lateral margin before the eyes to the occiput, base obtuse; antennæ and trabeculæ short, pale yellow; eyes black, prominent; prothorax transverse, anterior margin rounded, posterior convex, slightly channelled; metathorax quadrate, deep liver-colour, with a transverse line and two punctures, base truncate, with a tuft of hairs seated in a deep fovea at each angle; abdomen elongate ovate, fulvous yellow, lateral fasciæ deep liver-brown, confluent, except the last three; stigmatic apertures large and deep; sutures deeply impressed; legs chestnut, rather thick; anterior femora large, subangular. Length 1 to $1\frac{1}{4}$. *Immature.* Head and thorax chestnut, the sutures pale yellow, and a transverse dark

band anteriorly; antennæ and trabeculæ short, thick, and yellow; abdomen elongate and cylindrical, pale yellow white, lateral fasciæ deep liver-brown, narrow and interrupted at the stigmatic orifice; legs stout, pale yellow. Length $\frac{3}{4}$ to 1.

I am induced to consider these two Insects, although differing considerably at first sight, as the adult and immature state of the same species. I had drawn both and committed them to copper, under an impression that they were specifically distinct, but since, upon examining many specimens taken from recent Birds, I find such varieties in size, proportion, markings, and colour, as to convince me that the fig. 3 of plate 7, is nothing more than the last moult but one; many specimens in still earlier stages exhibit a greater diversity of appearance, and it is only by comparing a series that the identity of the whole can be inferred, sometimes the fasciæ are without the notch, at other times pale brown, and extending nearly across the abdomen. I have received this species in three different ages from the Rev. L. Jenyns, taken on the Gannet (Sula Bassana), I have found it myself both in the adult and immature state upon the same Bird, and also on the Cormorant (Phalacrocorax Carbo), and the Common Tern (Sterna hirundo).

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59. Docophorus alcedinis. — *Denny*. (Louse of the King-fisher.)

Plate VI. Fig. 1.

Pale fulvous-yellow; head large, acuminate; abdomen oblong ovate; head and thorax bright fulvous, the former large, acuminate; clypeus much produced, narrow, and truncate, dusky, two faint lines from the antennæ to the occiput, base broad and rotundate; eyes small; antennæ

slender, pale yellow; trabeculæ small; prothorax small, transverse; metathorax transverse, sub-conical, posterior margin rotundate; abdomen elongate ovate, pale fulvous, lateral margin and last three segments obscure chestnut; legs pale yellow, thick and strong. Length $\frac{3}{4}$.

The only specimen of this species which I have seen, was forwarded by the Rev. L. Jenyns, from the King-fisher (Alcedo Ispida).

Sub-Genus II. NIRMUS.

Nitzsch, Burmeister, Stephens, Children.—Pediculus. Linnæus.

SUB-GENERIC CHARACTER.

Body generally narrow and elongate; *head* of moderate magnitude, temporal margin rotundate; *trabeculæ* none, or very small and rigid; *antennæ* generally alike in both sexes, rarely thicker in the males, and still more rarely branched;* *abdomen* with the last segment in the m ales entire and rounded; *mesothorax* none.

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* Head rotundate or cordate.

1. Nirmus cameratus. (Louse of the Black & Red Grouse.)

Plate IX. Fig. 9.

Deep chestnut and pilose; head short and cordate, central band and sutural margins of the abdomen pale yellow-white; abdomen sub-ovate.

Nirmus cameratus. Nitzsch. Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. p. 331. Burmeister Handbuch ii. pt. ii. p. 430.—Pediculus Tetraonis. Linn. ii. 1020? Stew. Elemt. ii. p. 300?—Pediculus Lagopodis. Linn. ii. 1020? Stewt. Elemt. ii. p. 300. spe. 35?—Pediculus Lagopi. Fabr. Faun. Grœnl. p. 220. 192? Mull. prodr. 2200?

Head cordate, anterior part slightly produced, lateral

* I know of no British example with this character, which is given by Nitzsch.

margin, with small fuscous spot before the antennæ, and an impressed line passing to the occiput; vertex concave; antennæ short and cylindrical, the second joint the longest; trabeculæ very small; prothorax transverse; metathorax about the width of the head, sub-conical, base angular, and produced in the centre; abdomen sub-ovate, thickly pilose, hairs long and yellow, the first and last two segments deep chestnut, the intermediate six with a broad transverse fascia on each side, dorsal space and suture pale yellow-white; legs thick, pale fulvous; anterior femora sub-triangular. Length $\frac{3}{4}$.

Common upon the Red Grouse (Tetrao Scoticus), and Black Grouse (Tetrao Tetrix), and I suspect also upon the Ptarmigan (Tetrao lagopus). From the first species I have received specimens from P. J. Selby, Esq. of Twizell, and William Thompson, Esq. of Belfast. In some specimens the lateral margin of the abdomen is pale.

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2. Nirmus discocephalus. (Louse of the Cinereous Eagle.)

Plate IX. Fig. 10.

Bright fulvous; head nearly orbicular, with a chestnut lateral spot before the antennæ, and transverse bands on the abdomen.

Nirmus discocephalus. Nitzsch. Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. p. 331. Burmeister Handbuch ii. pt. ii. p. 430. sp. 21.

Head large, nearly orbicular, with a narrow chestnut band, anteriorly terminating in a large spot on each side before the antennæ, vertex, concave, base sub-truncate; eyes small; antennæ very short and cylindrical, the second joint the longest; trabeculæ short and thick; prothorax small, transverse; metathorax transverse, posterior margin

sub-angular, and produced, deeply marginate and convex; abdomen sub-ovate, pale yellow-white, with transverse chestnut or brown fulvous bands; sutures ciliate; legs pale fulvous, short and thick. Length $\frac{3}{4}$.

I have twice found this species on the Cinereous Eagle (Aquila albicilla), but notin great numbers.

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3. Nirmus turmalis. (Louse of the Great Bustard.)

Plate VI. Fig. 10.

Chestnut and shining; head cordate; abdomen elliptical, with the dorsal and sutural fasciæ pale yellow-white; legs long and slender.

Nirmus turmalis. Nitzsch. MSS.

Head cordate, with two diagonal lines from the trabeculæ to the occiput; eyes fuscous; trabeculæ very small and acute; antennæ slender, and filiform; prothorax small and transverse, with a fuscous spot on each lateral margin; metathorax sub-conical, lateral angles acute, anterior, with two fuscous uncinate spots; abdomen claviform, the first and last three segments deep chestnut, the five intermediate with a broad chestnut band on each side; the dorsal fascia and sutural margins pale yellow-white, ciliated with long hairs, lateral margin with a narrow dark line, stigmata large and prominent; legs long and slender, pale fulvous. Length 1.

The extreme rarity of the Bustard (Otis tarda) in this country, rendered the idea almost hopeless of obtaining the louse from a British specimen. I have therefore drawn my figure from German specimens, taken from the Bustard in the neighbourhood of Halle, for the opportunity of doing which I am indebted to the zeal of Dr. Burmeister.

4. NIRMUS NUMIDÆ.—*Denny.* (Louse of the Pintado.)

Plate X. Fig. 5.

Livid yellow, shining and smooth; head sub-panduriform, lateral margin black; abdomen with two fuscous interrupted dorsal fasciæ.

Head large, sub-panduriform, a quadrangular spot before each eye, and the lateral margin black; vertex concave, basal angles acute; eyes prominent, pale yellow; antennæ short, filiform, rather thick, the second joint very long; prothorax transverse, posterior margin rotundate, lateral margin with a pitchy spot on each side anteriorly; metathorax the width of the preceding, much produced in the centre of the posterior margin, with a fasciculus of hairs in a sinus on each side; abdomen ovate, the lateral margin with a narrow fuscous band, the first seven segments with a double series of fuscous patches, forming two interrupted dorsal bands, last two with a sub-angular fascia; legs pale yellow-white, rather thick, with a dark annulus at the extremity of the femora and tibiæ; tarsi ferruginous yellow. Length 1.

I found two specimens of this species on a Pintado (Numida Meleagris).

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5. NIRMUS OLIVACEUS? (Louse of the Nutcracker.)

Plate XI. Fig. 5.

Pale fulvous-yellow; head subcordate, with a pitchy spot on each side; abdomen with a pitchy black lateral margin; superior margin of the femora fuscous.

Nirmus olivaceus? Burmeister Handbuch ii. pt. ii. p. 431. sp. 26.

Head subcordate, clypeus emarginate, base truncate, lateral margin pale fuscous, with a pitchy conical spot, and deep sinus before each eye, and two impressed sigmoid lines from the antennæ united at the occiput; eyes small;

antennæ slender and filiform, the second joint rather the longest; prothorax quadrangular, lateral margin fuscous; metathorax as wide as the head, posterior margin angular, lateral margin fuscous and produced; abdomen oblong, the lateral margin of the first seven segments, with a pitchy black fascia, shading internally into chestnut, the eighth segment with a transverse chestnut band; legs pale yellow, femora with the superior margin, and tibiæ with a spot at the apex, fuscous. Length $\frac{2}{3}$.

I have seen but one specimen of this species, which I took from a skin of the Nutcracker (Nucifraga caryocatactes), and suppose it to be the *N. Olivaceus* of Dr. Burmeister.

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6. Nirmus gracilis. (Louse of the House Martin.)

Plate XI. Fig. 7.

Pale yellow-white, shining and smooth; head rotundate, with a conical spot on each side; abdomen with deep chestnut fasci on the lateral margin.

Nirmus gracilis. Burmeister Handbuch ii. pt. ii. p. 429. sp. 15.

Head and thorax bright chestnut yellow, the former rotundate-trigonate, slightly depressed in the centre; clypeus sub-emarginate, lateral margin entire, with an angular liver-coloured spot before the antennæ, base truncate; antennæ short and slender; prothorax quadrangular; metathorax transverse, posterior margin angular and produced, lateral margin of both deep chestnut; abdomen obovate, lateral margin serrulate, the first seven segments with a deep chestnut subangular patch on each side, darker beneath; legs short and thick; tibiæ with a fuscous line on the superior margin. Length $\frac{1}{2}$.

Infests the House Martin (Hirundo urbica).

7. Nirmus uncinosus. (Louse of the Hooded Crow.)

Plate V. Fig. 1.

Pale yellow-white; head subcordate; lateral margin of the abdomen with pitchy uncinate transverse spots.

Nirmus uncinosus. Nitzsch. Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. p. 331. Burmeister Handbuch ii. pt. ii. p. 430. sp. 23.

Head and thorax pale yellow, the former subcordate, much wider in the male, lateral margin deeply sinuated before the eyes, base concave, a small pitchy spot above the eye, a broad oblique fascia before the antennæ, and two on the anterior margin of the clypeus, a depressed semicircular line from the eyes to the occiput; trabeculæ short and acute; antennæ thick, pale fulvous, the third and fourth joints with a fuscous band; eyes pale and flat; prothorax small, transverse; metathorax large, transverse, base rotundate, lateral margin oblique; abdomen nearly orbicular in the male, oblong oval in the female, the first seven segments with a transverse pitchy-black hook-shaped spot on each lateral margin, underside with the central portion of each segment deep brown; legs strong; anterior femora enlarged, extremity of tibiæ with a fuscous band. Length ♂ $\frac{1}{2}$ ♀ $\frac{2}{3}$.

The only specimens of this species I possess, were forwarded by P. J. Selby, Esq. from the Hooded Crow (Corvus cornix). The great dissimilarity of form in the two sexes is greater here than in any other species I know, for while the female has all the appearance of a Nirmus, from its oblong body, the male resembles a *Docophorus*, from its great breadth of abdomen, as well as head. The peculiar hook-like markings on the lateral margin of the abdomen readily distinguishes this from all the other species of the sub-genus.

8. Nirmus marginalis. (Louse of the Fieldfare.)

Plate VIII. Fig. 2.

Pale fulvous, shining and smooth; head cordate, with a large angular spot on each side; posterior margin of the metathorax acutely angular; lateral margin of the abdomen with a narrow fuscous band

Nirmus marginalis. Burmeister Handbuch ii. pt. ii. p. 431. sp. 27.

Head large and cordate, bright fulvous yellow, anterior lateral margin, with two large acutely angular chestnut patches, terminating in impressed lines at the occiput; antennæ slender; trabeculæ very small; prothorax small, transverse, lateral margin rotundate, deep chestnut; metathorax sub-triangular, the superior margin rotundate, with a deep chestnut lateral spot, posterior angles acute; abdomen subclavate, centre pale yellow, lateral margin pale fulvous, each segment, except the last two, with a narrow fuscous band; legs thick, pale yellow; anterior femora enlarged; tibiæ banded with black. Length $\frac{2}{3}$.

Communicated from the Fieldfare (Turdus pilaris) and Missel Thrush (Turdus viscivorus) by the Rev. L. Jenyns, from the Ring Ouzel (Turdus torquatus) by Henry Doubleday, Esq. of Epping, from which bird I have also taken specimens myself.

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* * Head oblong and rotundate.

9. Nirmus fuscus?

Plate IX. Fig. 8.

Testaceous, shining, and pubescent, with a dark fuscous margin; abdomen with a broad, dorsal, interrupted, fuscous band; femora with a fuscous spot.

Nirmus fuscus? Nitzsch. MSS. Nirmus discocephalus? Lyonet, Mem. du Muse. tom. 18. plate 12. fig. 8.

Head sub-panduriform, vertex concave, lateral margin with a deep fuscous band, interrupted at the insertion of the antennæ, occiput concave; antennæ slender, subclavate, the first joint short and thick, second long and slender, third and fourth short and transverse, with a broad fuscous band, fifth the largest, fuscous at the base; trabeculæ short and conical; prothorax not so wide as the head, transverse, lateral margin fuscous; metathorax transverse, sub-conical, base slightly produced in the centre, posterior lateral angles somewhat acute and deep fuscous; abdomen oblong, subclaviform, with a broad deep fuscous dorsal band interrupted at the sutures, lateral margin of the first seven segments, with a fuscous deeply notched fasciæ, sutural margin pale; legs rather stout, with a dark spot at the apex of the femora, anterior femora enlarged at the base. Length $\frac{2}{3}$ to 1.

The first specimens of this species I examined, were communicated by the Rev. L. Jenyns, who took them upon a Moor Harrier (Circus rufus), in which the dark dorsal fascia and lateral margins are very conspicuous. In two other specimens from the Common Buzzard (Buteo vulgaris), in the same gentleman's collection, which I suppose to be immature, the lateral margin is wanting, the dorsal band less distinct. I have since received examples from the Kite (Milvus ictinus), and also from the Rough-legged Buzzard (Buteo lagopus), I suppose this to be the *N. fuscus* of Nitzsch, MSS. and probably the N. *discocephalus* of Lyonet, though it differs somewhat from his figure in the prothorax.

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10. Nirmus rufus. (Louse of the Kestril.)

Plate XI. Fig. 11.

Bright fulvous and pubescent; metathorax with the pos-

terior margin tridentate; abdomen obscurely banded; head with a ferruginous band on each side before the antennæ.

Nirmus rufus? Burmeister Handbuch ii. pt. ii. p. 430. spe. 20. Nirmus Platyrhynchus? Lyonet Mem. du Muse. tom. 18. pl. 13. fig. 4.

Head sub-panduriform, with a ferruginous marginal patch before the antennæ, terminating in two curved impressed lines united at the occiput; antennæ rather short, filiform, the second joint much the longest; trabeculæ short and acute; prothorax small, transverse, with a channel in the centre; metathorax sub-conical, lateral angles acute, centre of the posterior margin produced; abdomen oblong, sub-claviform, with obscure transverse bands, sutural and lateral margin sometimes much paler; legs thick; anterior femora slightly enlarged. Length $\frac{3}{4}$.

This species, which I suppose to be identical with Dr. Burmeister's *rufus*, I have found on the Kestril (Falco tinnunculus), and received specimens from my brother taken on the Merlin (Falco Æsalon), and Sparrow-Hawk (Accipiter fringillarius). It approaches very near to the preceding species, but is generally smaller, and always devoid of the dark margin. I suspect it is the insect figured by Lyonet as N. *platyrhynchus*. In my figure the clypeus is represented rather too broad.

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11. Nirmus cuculi.—*Denny*. (Louse of the Cuckow.)

Plate X. Fig. 11.

Fulvous, smooth and shining, posterior margin of the metathorax produced in the centre; abdomen with obscure transverse bands.

Head sub-panduriform, depressed at the occiput; clypeus with a chestnut margin; apex pale; antennæ very slender, filiform joints nearly equal; trabeculæ very small; pro-

thorax transverse; metathorax much darker, posterior margin acutely produced in the centre; abdomen oblong, subclaviform, with obscure transverse dorsal bands; legs rather slender, pale fulvous. Length $\frac{3}{4}$.

I have found this species on the Cuckow (Cuculus canorus), and received specimens of W. M. Tweedy, Esq. of Truro, taken off the same bird, which I at first supposed to be Dr. Burmeister's *N. latirostris*, but as all examples I have seen are without the black spots on the abdomen, which Dr. B. gives in his specific character of that species, I have ventured to constitute this as a new species.

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12. Nirmus tessellatus.—*Denny*. (Louse of the Bittern.)

Plate VII. Fig. 2.

Pale yellow-white; margin black; head panduriform; abdomen with a double row of quadrangular pale fuscous spots.

Head panduriform; clypeus rotundate, the exterior margin blackish, the anterior dull ferruginous, base truncate; antennæ short, thick, and subclavate, the second joint the longest and obconical; eyes prominent; prothorax narrow, sub-quadrangular, slightly channelled in the centre; metathorax ochraceous, as wide as the head, much produced behind with a small fasciculus of hairs from each lateral angle, and a bi-furcated fuscous band on the lateral margin; abdomen lanceolate, each segment, excepting the last, with a black marginal band, and two pale fuscous quadrangular spots in the centre; legs pale yellow-brown, rather thick; the anterior femora enlarged and sub-triangular, with the superior margin reflected. Length $\frac{3}{4}$.

I have seen but a single specimen of this species, which

I found on the Bittern (Botaurus Stellaris), and supposing it undescribed, have named it in allusion to the tessellated appearance of the abdomen.

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13. Nirmus limbatus. (Louse of the Crossbill.)

Plate IX. Fig. 3.

Pale yellow-white, smooth, and shining, lateral margin black; head rotundate in front; legs rather thick with dark annuli.

Nirmus limbatus? Burmeister Handbuch ii. pt. ii. p. 429. spe. 13.

Head and thorax pale luteous; clypeus rotundate, margined with black, base sub-truncate, vertex slightly channelled; antennæ filiform, the second joint much the longest; trabeculæ very short; prothorax short, quadrangular; metathorax transverse, posterior margin produced in the centre; abdomen oblong, apex obtuse, dirty white, somewhat fulvous down the centre, underside with a distinct brown band from base to apex, lateral margin black; legs pale yellow, very strong; tibiæ and femora with a dark annulus, the anterior femora enlarged. Length $\frac{3}{4}$.

Communicated by my brother from the Crossbill (Loxia curvirostra).

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14. Nirmus subcuspidatus. (Louse of the Roller.)

Plate XI. Fig. 1.

Pale fulvous-yellow, smooth, and shining; head with a chestnut angular patch on each side; clypeus sub-acuminate; abdomen with transverse fulvous bands.

Nirmus subcuspidatus. Burmeister Handbuch ii. pt. ii. p. 430.

Head sub-cordate, fulvous; clypeus sub-acuminate and depressed, a chestnut acutely angular patch on each side

before the antennæ, extending to, and uniting at, the occiput; trabeculæ small and acute; antennæ very slender, filiform, the first joint the largest and conical, the second the longest, the third and fourth with a fulvous band; prothorax narrower than the head, transverse; metathorax transversely conical, posterior margin slightly produced in the centre; abdomen oblong, sub-claviform, segments fulvous, sutural margins pale; legs pale yellow, rather stout; ungues chestnut. Length $\frac{2}{3}$—1.

I am again indebted to the friendship of Dr. Burmeister for the opportunity of figuring this species, of which I in vain sought for a British specimen, owing to the rarity of the Roller (Coracias garrula) in this country.

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15. Nirmus argulus. (Louse of the Rook.)

Plate VIII. Fig. 4.

Elongate; head and thorax testaceous; transverse fasciæ on the abdomen marked with two united white spots on each side; antennæ and tibiæ with fuscous annuli.

Nirmus argulus. Nitzsch. Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. p. 331. spe. 5. Burmeister Handbuch ii. pt. ii. p. 430. spe. 24.

Head sub-cordate; clypeus with a deep pitchy margin, a depressed diagonal line on each side from the base of the antennæ uniting on the vertex, base truncate, each temporal lobe bearing a long stiff hair; eyes prominent; antennæ pale yellow, long, sub-filiform, the first joint large, the second, third, and fourth, with a broad fuscous band; trabeculæ very small, acute; prothorax testaceous yellow, small, and quadrangular; metathorax transverse, wider than the head, posteriorly somewhat angular, produced in the centre, lateral margin with a broad pitchy band; abdomen oblong, pale testaceous yellow, the first eight segments

with a transverse conical pitchy fascia on each side, marked with two circular white spots united by a line; legs pale yellow, thick and strong; femur and tibia with a fuscous annulus at the apex. Length 1.

I have found this species upon the Rook (Corvus frugilegus), but by no means plentiful. Dr. Burmeister states it is also found on the Raven (Corvus corax). I received a specimen from J. C. Dale, Esq. of Glanvilles Wotton, Dorset, which he informs me was found on the Blackbird (Turdus merula). This however had most probably been only a temporary sojourner; Mr. Stephens in his Systematic Catalogue of British Insects mistakes the *Menopon eurysternum* of Burmeister for this species, at least I suspect so, from his Synonyms, with one exception, referring to the former, and not to the *Nirmus argulus* of Nitzsch.

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16. Nirmus viscivori.—*Denny*. (Louse of the Missel Thrush.)

Plate VII. Fig. 7.

Pale stramineus, shining and smooth; head fulvous yellow, with a broad semicircular chestnut fascia on each side; sutures of the abdomen strongly marginate, lateral margin fulvous.

Head sub-cordate, with an oblong depression in front, and a transverse impressed line connecting the lateral fasciæ; vertex concave, lateral margin slightly sinuate before the eyes, with a long stiff hair from each temporal lobe, base truncate; antennæ rather thick, the second joint somewhat obconic; trabeculæ conical; prothorax transverse; metathorax wider than the head, subtriangular, lateral margins oblique, posterior acutely produced in the centre and setose; abdomen oblong oval, sutures of the

first segment acutely angular, of the fifth, sixth, and seventh semicircular, last segment very small, stigmatic orifices large; legs thick and strong. Length $\frac{3}{4}$.

Found on the Missel Thrush (Turdus viscivorus), by Rev. L. Jenyns in Cambridgeshire, Mr. G. R. Denny in Norfolk, and by myself in Yorkshire.

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17. Nirmus fulicæ.—*Denny*. (Louse of the Coot.)

Plate IX. Fig. 2.

Short, pale testaceous yellow, shining and smooth, lateral margin fulvous; clypeus with a broad chestnut margin.

Head large, sub-rotundate; clypeus produced, with the lateral margin chestnut, base broad, occiput with a transverse chestnut fascia, each temporal lobe bearing a long stiff hair; eyes prominent; antennæ short, pale yellow, placed in a sinus of the lateral margin; prothorax transverse, broader behind than in front, posterior margin rotundate; metathorax the width of the head, lateral margin rotundate, posterior much produced and acute, strongly ciliate; abdomen short and oval, the lateral margin fulvous; legs thick; femur broad, pale yellow. Length $\frac{1}{3}$.

Found on the Coot (Fulica atra). I should have considered this species the *Nirmus minutus* of Nitzsch, which infests the Coot, but he refers to fig. 3. in plate IV. of Redi, which is certainly not our Insect, but rather I should have supposed a *Docophorus?*

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* * * Head sub-triangular or sub-conical.

18. Nirmus decipiens. (Louse of the Avocett.)

Plate II. Fig 2.

Testaceous, smooth, and shining, slightly pubescent; lateral margin of the thorax and abdomen deep fuscous; head and prothorax dull chestnut.

Nirmus decipiens. Nitzsch. Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. p. 831.—Pediculus Recurvirostræ. Linn. Syst. Nat. ii. p. 1019. Faun. Suec. 1956. Fabr. Syst. Ent. 808. 25. Syst. Inst. ii. 481. 29. Stewart. Elemt. ii. 299. 28. Turt. iii.

Head sub-triangular; clypeus narrow, lateral margin entire, with a somewhat curved, impressed line on each side, from the antennæ to the occiput; eyes flat; antennæ slender, pale yellow; prothorax transverse, much narrower than the head, slightly channelled in the centre; metathorax, pale chestnut, acutely angulated posteriorly, lateral margin fuscous; abdomen ovate, pale, testaceous yellow, the first seven segments with a broad fuscous lateral margin, the last three segments chestnut; legs pale yellow, rather stout. Length $\frac{1}{2}$ ♂ $\frac{2}{3}$ ♀.

Obligingly communicated by Dr. Burmeister, of Halle, from the Avocett (Recurvirostra avocetta).

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19. Nirmus hæmatopi. (Louse of the Oyster-Catcher.)

Plate X. Fig. 3.

Pale yellow white, lateral margin black; head pale fulvous yellow; trabeculæ fuscous; abdomen sub-clavate.

Nirmus glaucus. Stephen's Cat. pt. ii. 332 —Pediculus Hæmatopi. Linn. Syst. Nat. ii. 1019? 29? Faun. Suec. 1957. Fabr. Syst. Ent. 809. 26. Syst. Inst. ii. 481. 30. Stew. Elem. ii. p 298?

Head sub-conical, pale fulvous-yellow; clypeus with a transverse and semicircular impressed line, lateral margin with an interrupted black band, and chestnut line on each side, extending from the antennæ to the occiput, base concave; antennæ slender, the second joint the longest; prothorax narrow, sub-quadrate, lateral margin black; metathorax transversely triangular, humeral margin black; abdomen, dull yellow white, sub-claviform, the last two segments pale fuscous, lateral margin of the first seven seg-

ments black; legs pale yellow, rather stout; anterior femora sub-angular. Length $\frac{2}{3}$.

Communicated by Mr. Tweedy of Truro, from the Oyster-Catcher (Hæmatopus œstralegus).

20. Nirmus sellatus. (Louse of the Common Tern.)

Plate VII. Fig. 5.

Pearly white, smooth and shining; head, thorax, and abdomen, with a dark margin, the segments of the latter with a dark sub-lunar mark in the centre.

Nirmus sellatus. Burmeister Handbuch ii. pt. ii. p. 428. spe. 6.—Pediculus Sternæ? Linn. Syst. Nat. ii. 1019. 21. Faun. Suec. 1953. Fabr. Syst. Ent. 808. 22. Syst. Inst. ii. 486. 26. Stew. Elemt. ii. p. 299. 22—Ricinis Lari?—Degeer. Inst. 7. 77. 4. tab. 4. fig. 12.

Head and thorax pale yellow-white, the former sub-triangular and obtuse, with a black sinuated margin interrupted at the clypeus, with two short fasciæ extending to the vertex, and an impressed oblique line from the antennæ to the occiput; trabeculæ small and acute; antennæ short and slender, the last three joints the darkest; prothorax very small, transverse; metathorax as wide as the head, lateral margin oblique, with a broad black band, posterior margin acutely angular in the centre; abdomen claviform, with a black dentate lateral margin, the 3rd, 4th, 5th, and 6th segments generally with pitchy semilunar marks, and a black spot in the centre; legs short and robust, with a pitchy annulus at the extremity of the femora and tibiæ; tarsi chestnut. Length 1.

This species is subject to great variety in the markings of the abdomen. I have received specimens of this insect from the Kittiwake Gull, through Mr. Tweedy of Truro; from the Herring Gull (Larus argentatus) and Black-headed

Gull (Larus ridibundis) through Mr. Thompson of Belfast, and from the Common Tern (Sterna Hirundo) through Rev. L. Jenyns.

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21. Nirmus vanelli —*Denny*. (Louse of the Gray Plover.)

Plate VII. Fig. 6.

Pale, testaceous, smooth and shining; head elongate and conical, with a dark interrupted lateral margin; abdomen with oblique pitchy fasciæ on the sides.

Head large, elongate, and conical, sinuated on each side before the eyes, with a series of pitchy spots on the lateral margin, forming a somewhat interrupted band, base rotundate; trabeculæ short and acute; antennæ long and slender; prothorax transverse; metathorax with a dark humeral patch on each side, posterior margin angular; abdomen elongate, sub-claviform, with a series of oblique pitchy fasciæ on the lateral margin of the segments, and a short transverse, fuscous spot in the centre of each segment, underside of the abdomen with a large oblong fuscous patch; legs thick, pale yellow; the anterior femora large and rotundate; tarsi chestnut. Length ♂ $\frac{1}{2}$ ♀ $\frac{2}{3}$.

female; male with deep chestnut fasciae

Communicated from the Gray Plover (Vanellus griseus), by Mr. Thompson; and from the Turnstone (Strepsilas interpres), by Mr. Tweedy.

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22. Nirmus merulensis.—*Denny*. (Louse of the Blackbird.)

Plate VII. Fig. 1.

White, smooth, and shining; lateral margin of the abdomen chestnut, with angular black mark; head and thorax bright yellow.

Head and thorax bright yellow, the former sub-triangular, clypeus retuse, lateral margin entire, with a deep chestnut angular spot before the eyes, terminating in an impressed line on each side towards the occiput, base subtruncate; eyes small; trabeculæ prominent and acute; antennæ filiform and slender; prothorax narrow and transverse; metathorax transverse, as wide as the head, lateral margin chestnut, produced and acute towards the base, centre angular, with an impressed line; abdomen claviform, white, the first seven segments with a broad chestnut band on the lateral margin, on the superior half of which is a triangular black spot, last segment fulvous; legs pale fulvous; anterior femora sub-lobate. Length ♀ $\frac{1}{3}$ ♂ $\frac{7}{8}$.

I once found several specimens of this species on a Blackbird (Turdus merula), killed near Leeds, since which period I have never met with any others.

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23. Nirmus glandarii.—*Denny*. (Louse of the Jay.)

Plate VIII. Fig. 3.

Pale testaceous-yellow, smooth, and shining; abdomen with a deep fuscous margin; head sub-conical.

Head testaceous-yellow, more intense in the centre, with a depressed semicircular line terminating in a fuscous transverse portion of the lateral margin on each side, before the antennæ; clypeus truncate; trabeculæ small and acute; antennæ filiform, rather thick; eyes small and black, nearly hid under the lateral margin; prothorax small and transverse; metathorax large, sub-triangular, lateral angles deep fuscous, posterior acute, finely ciliated abdomen claviform, pale testaceous-yellow, each segment, excepting the last two, with a deep fuscous margin; legs pale testaceous, thick and strong. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns, from the Jay (Garrulus glandarius).

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24. Nirmus cuspidatus? (Louse of the Water-rail.)

Plate VI. Fig. 2.

Pale testaceous, oblong, elliptical, finely pubescent; head conical, lateral margin chestnut; metathorax acutely angular behind; abdomen elliptical, lateral margin blackish-chestnut and serrulate.

Pediculus cuspidatus? Scopoli Ent. Carniol. 385. n. 1049.

Head very long, conical, and depressed, lateral margin chestnut, interrupted, subangular before the antennæ, and a transverse band at the occiput; antennæ slender and filiform; trabeculæ small; prothorax transverse, lateral margin chestnut; metathorax as wide as the head, with a chestnut spot on each side, base much produced and acutely angular; abdomen elliptical, lateral margin serrulate, pitchy black, shading internally into chestnut; legs pale yellow, long and slender; the anterior femora lobate. Length $\frac{1}{2}$.

The only two specimens of this species I have seen were in the collection of Rev. L. Jenyns, one of which was taken from the Common Water Gallinule (Gallinula chloropus), and the other from the Water Rail (Rallus aquaticus). I have quoted Scopoli, under an impression that our Insect is the species described by him under the name of *Cuspidatus*, although it does not perfectly agree with his character, in all points.

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25. Nirmus iliaci.—*Denny*. (Louse of the Red-wing.)

Plate IX. Fig. 4.

Pale yellow-white, shining and smooth, with a narrow black marginal band; head and thorax testaceous yellow.

Head sub-conical, slightly depressed at the vertex with a small sub-angular black spot on each side before the antennæ; occiput concave; eyes small and black; antennæ filiform, rather thick; trabeculæ very small and acute; prothorax sub-quadrate; metathorax as wide as the head, lateral margin rotundate, posterior margin produced in the centre, and angular; abdomen oblong, apex obtuse, sutures sinuated in the centre; legs pale testaceous yellow, rather stout; anterior femora enlarged. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns, from the Redwing (Turdus Iliacus), and by Mr. Thompson, from the Rose-coloured Pastor (Pastor roseus), killed near Belfast.

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26. Nirmus claviformis.—*Denny*. (Louse of the Ring-Dove.)

Plate IX. Fig. 7.

Head and thorax pale tawny; abdomen oblong and claviform, pale yellow-white, the lateral margin tawny; legs thick.

Head sub-conical, with a semicircular impressed line on the clypeus, and two curved lines from the antennæ to the occiput, lateral margin with a sub-triangular chestnut spot on each side before the antennæ; eyes small; antennæ pale yellow, sub-clavate, the first joint large, second long and obconic, third and fourth short, fifth conical; trabeculæ small, somewhat curved and acute; prothorax sub-quadrate; metathorax small and conical, the posterior margin slightly produced in the centre; abdomen long, very much attenuated at the base, large and clavate towards the extremity; apex acute, lateral margin with a broad tawny fascia; legs pale yellow and thick; anterior femora short and lobate. Length ♂ $\frac{1}{2}$ ♀ $\frac{3}{4}$.

First communicated by the Rev. L. Jenyns from the Ring-Dove (Columba palumbus), and the Stock-Dove (Columba œnas), from the latter of which I have also taken specimens of the same species.

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27. Nirmus annulatus. (Louse of the Common Thick-knee.)

Plate VIII. Fig. 5.

Testaceous-yellow, centre of abdomen fuscous, segments with nearly black annuli; antennæ long and sub-clavate; trabeculæ prominent.

Nirmus annulatus? Burmeister Handbuch ii. pt. ii. p. 428.

Head very long, sub-conical; clypeus produced; base rotundate, a bifurcate depression anteriorly, a transverse impressed line across the vertex, and a dark one at the occiput, centre with a fuscous patch; eyes very small; antennæ pale yellow, long, slender, and sub-clavate, the second joint obconic, much the longest; trabeculæ curved and prominent; prothorax transverse, channelled in the centre; metathorax sub-triangular, superior margin rotundate, with a fuscous fascia on each side, and a deep foveola near the lateral angles, posterior margin ciliate; abdomen ovate; legs pale testaceous-yellow; anterior femora lobate. Length $\frac{3}{4}$.

For a specimen of this species I am indebted to the Rev. L. Jenyns, who took it from the Common Thick-knee, or Thick-kneed Bustard (Œdicnemus crepitans).

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28. Nirmus nebulosus. (Louse of the Starling.)

Plate XI. Fig. 13.

Pale yellow-white, lateral margin bright fulvous, the first six segments with triangular chestnut patches; head and

thorax pale fulvous, the former with the anterior very acute, lateral margin with chestnut and pitchy spots.

Nirmus nebulosus. Burmeister Handbuch ii. pt. ii. p. 429. spe. 16.

Head short, sub-triangular; clypeus very acute, with a conical chestnut spot on each side in front, and two nearly black on the temporal margin, vertex concave, base truncate; eyes small; antennæ filiform, pale yellow; prothorax narrower than the head, transverse; metathorax wider than the head, transverse, lateral margin oblique with a chestnut spot on each side, posterior rotundate; abdomen large, sub-claviform, obtuse; legs pale fulvous-yellow. Length $\frac{3}{4}$.

Communicated by the Rev. L. Jenyns, from the Starling (Sturnus vulgaris), from which Bird I have since taken it myself.

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29. Nirmus apiastri.—*Denny.* (Louse of the Bee-eater.)

Plate X. Fig. 4.

Bright fulvous-yellow, shining and smooth, lateral margin chestnut.

Head triangular; clypeus produced, with a bifurcate depression in front, lateral margin with a sinuated chestnut fascia, vertex depressed, base truncate, with a transverse chestnut band; antennæ short and filiform, the second joint the longest; trabeculæ small and acute; prothorax transverse; metathorax transverse, lateral angles produced, posterior margin acutely angular; abdomen claviform, apex acute, stigmatic orifices large and prominent, lateral margin chestnut; legs pale yellow. Length $\frac{1}{2}$.

Only one specimen of this species has come under my notice, which was forwarded by Mr. Thompson from Belfast, who found it upon the Bee-eater (Merops apiaster).

30. Nirmus ochropi.—*Denny*. (Louse of the Green Sandpiper.)

Plate XI. Fig. 12.

Dark chestnut, smooth and shining; head very long; clypeus ochraceous.

Head elongate, conical; clypeus produced with a bifurcate impression at its base, lateral margin with a conical black spot before the antennæ, and an oblong fascia on the temporal portion on each side, base truncate; occiput with two depressed curved lines; antennæ slender and filiform, rather short; prothorax transverse, rotundate, depressed in the centre; metathorax sub-quadrate, posterior margin angular and produced; abdomen oblong, sub-claviform, the first six segments with a dark angular patch on the lateral margin; legs fulvous, rather thick. Length ♂ ¾ ♀ 1.

Communicated by the Rev. L. Jenyns, from the Green Sandpiper (Totanus Ochropus.)

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31. Nirmus attenuatus. (Louse of the Corn-Crake.)

Plate X. Fig. 2.

Chestnut, shining and smooth, lateral margin black; head attenuated, bright fulvous.

Nirmus attenuatus. Nitzsch. Germ. Mag. iii. p. 291. Burmeister Handbuch ii. pt. ii. p. 428. Stephen's Cat. pt. ii. 331. spe. 9.—Pediculus Ortygometræ. Schr. Hist. Aus. 503? Stew. Elem. ii. p. 300.

Head elongate, conical; clypeus with a semicircular depression, slightly setose, lateral margin and transverse band at the occiput black, vertex concave; antennæ long, slender, and filiform, the second joint much the longest; trabeculæ very minute and acute; prothorax sub-quadrate, narrower than the head; metathorax transverse, posterior margin

much produced in the centre and acutely angular; abdomen claviform, chestnut, median line somewhat fuscous, last two segments bright fulvous, stigmatic orifices large, lateral margin with a deep serrated black band, sutural margins pale; legs pale chestnut. Length ♂ $\frac{1}{2}$ ♀ $\frac{3}{4}$.

This species I have found, though sparingly, upon the Corn-Crake (Crex pratensis), and Mr. Thompson took one specimen from the Redshank Sandpiper (Totanus calidris).

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32. Nirmus strepsilaris.—*Denny.* (Louse of the Turnstone.)

Plate XI. Fig. 4.

Fuscous, smooth and shining, lateral margin pitchy black; head dark chestnut, with two semicircular transverse black fasciæ in front.

Head elongate, sub-triangular; clypeus produced, with a sub-quadrate depression in front, two broad black transverse fasciæ before the antennæ, and an arcuate depressed line on each side from the base of the antennæ to the occiput, base rotundate; eyes small, black; antennæ pale chestnut, slender; trabeculæ small and acute prothorax much narrower than the head, transverse, dark chestnut; metathorax fuscous, much produced posteriorly and angular, channelled in the centre; abdomen obovate, fuscous, stigmatic areolas paler, lateral margin pitchy black, last two segments chestnut; legs dark chestnut. Length $\frac{1}{2}$.

Found on the Turnstone (Strepsilas interpres), by Mr. Thompson at Belfast, and Mr. Heysham at Carlisle.

33. Nirmus hiaticulæ.—*Denny.* (Louse of the Ringed Plover.)

Plate XI. Fig. 10.

Head, thorax, and lateral margin of the abdomen bright fulvous yellow, shining and smooth, each segment of the latter with a broad transverse lurid fascia in the centre.

Head acuminate; clypeus narrow and truncate, with a bifurcate impression in front, a somewhat sigmoid impressed line from the base of the antennæ on each side united on the vertex, occiput truncate; antennæ pale yellow, filiform; prothorax transverse, channelled in the centre; metathorax narrower than the head, posterior margin acutely angular; abdomen obovate, pale yellow-white, lateral margin fulvous yellow, median line with transverse lurid bands; legs pale fulvous yellow and thick. Length $\frac{1}{2}$.

Communicated by Mr. Tweedy, from the Ringed Plover (Charadrius hiaticula).

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34. Nirmus fusco-marginatus.—*Denny.* (Louse of the Eared Grebe.)

Plate X. Fig. 1.

Pale testaceous-yellow, shining, smooth, and pubescent; head elongate, triangular, pale fulvous; lateral margin of the thorax and abdomen pitchy brown.

Head large, sub-triangular, clypeus produced, with a subquadrate depression anteriorly, lateral margin and two diagonal lines from the antennæ to the occiput deep chestnut, a depressed transverse line across the vertex; eyes prominent; antennæ pale yellow, filiform, the second joint much the longest; trabeculæ very short and acute; prothorax sub-conical, channelled in the centre, lateral margin

pitchy-brown, base rotundate; metathorax quadrangular, with a subtriangular pitchy spot on each side; abdomen oblong ovate, the last segment chestnut, the first six segments with a pitchy-brown lateral band; legs thick, pale yellow; tarsi chestnut. Length $\frac{1}{2}$.

Found on the Eared Grebe (Podiceps auritus), and communicated by Mr. Thompson from Belfast.

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35. Nirmus rallinus.—*Denny*. (Louse of the Water Rail.)

Plate VIII. Fig. 7.

Pale yellow-white, shining, smooth, and depressed; head, thorax, and lateral margin of the abdomen pale fulvous, the former elongate; metathorax with the anterior angles protuberant.

Head elongate, conical, with a pale chestnut, lateral band anteriorly, and an angular spot before the eyes; vertex with a somewhat oval depression, occiput truncate; eyes small, nearly obscure; antennæ pale fulvous, thick, filiform, the first two joints the largest; trabeculæ small and acute; prothorax quadrangular, depressed in the centre; metathorax sub-quadrate, rather widest at the posterior margin, with a slight protuberance on each side anteriorly; abdomen elongate and acute, lateral margin pale fulvous; legs rather thick, femora enlarged. Length ♂ $\frac{1}{2}$ ♀ 1.

I obtained this species from the Water Rail (Rallus aquaticus).

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36. Nirmus alcæ.—*Denny*. (Louse of the Razor-Bill.)

Plate IX. Fig. 1.

Head and thorax bright fulvous yellow, and shining, the former oblong, with a sinuated band on each side of deep

chestnut; abdomen with broad dull testaceous, lateral fascia; legs fulvous.

Head oblong conical, clypeus rotundate, a broad chestnut sinuated band on each side before the antennæ, a transverse line across the vertex, which is concave, temporal angles sub-rotundate, occiput truncate; antennæ slender filiform, pale yellow; trabeculæ minute; prothorax small, transverse, and rotundate; metathorax transversely triangular, anterior margin rotundate, lateral margins rectangular; abdomen sub-elliptical, pale, yellow-white, the first six segments with a broad, testaceous, lateral margin, shading into black externally, last three segments wholly testaceous, sutures of the first three sub-angular; legs pale fulvous, the femora rather thick. Length $\frac{2}{3}$.

The first specimen of this species I examined was forwarded from Twizell House by P. J. Selby, Esq. who took it upon the Razor-Bill (Alca torda), since which I have obtained more examples myself from the same species of bird.

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37. Nirmus œdicnemi.—*Denny*. (Louse of the Common Thick-Knee.)

Plate VII. Fig. 8.

Pale testaceous-yellow, shining, and pubescent; head large, sub-conical, lateral margin chestnut; antennæ very short and thick; legs thick.

Head large, elongate, sub-conical, clypeus slightly sinuate, with an oblong depression in front, united to a semicircular transverse line, a sigmoid depression on each side united on the vertex, and two longitudinal lines to the occiput, base truncate; antennæ very short, thick, and conical; trabeculæ short, very thick; prothorax transverse;

metathorax transverse, equal in width with the former, channelled, posterior margin rotundate; abdomen claviform; stigmatic orifices prominent; legs very thick, pale yellow; tibiæ clavate; ungues chestnut. Length $\frac{1}{2}$.

I obtained two specimens of this species from a Thick-Kneed Plover (Œdicnemus crepitans).

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38. Nirmus stramineus.—*Denny*. (Louse of the Woodpecker.)

Plate VIII. Fig. 9.

Pale yellow-white, shining, smooth, and sub-diaphanous, lateral margin of the abdomen pale, testaceous; legs thick and strong.

Head sub-conical; clypeus rotundate; vertex concave; antennæ slender and filiform; trabeculæ acute; eyes very small; prothorax transverse, rotundate before and behind; metathorax wider than the head, transversely sub-conical, posterior margin rotundate, slightly setose; abdomen oblong, sub-clavate, lateral margin sub-crenate; legs thick; tibiæ clavate; ungues slender. Length $\frac{2}{3}$.

In the valuable collection of Nirmi, which the Rev. L. Jenyns obligingly forwarded at the commencement, and allowed me to retain during the entire progress of this work, is a specimen of this species from the Great Spotted Woodpecker (Picus major). To Mr. Tweedy I am also indebted for specimens taken from the Green Woodpecker (Picus viridis) at Truro.

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39. Nirmus phalaropi.—*Denny*. (Louse of the Gray Phalarope).

Plate VIII. Fig. 6.

Pale testaceous-yellow; head pale chestnut; abdomen

claviform, deep fulvous towards the apex, lateral margin pitchy black, posterior femora acutely toothed.

Head oblong and conical, with a spot before the antennæ, and the lateral margin of the temporal portion fuscous; clypeus with a bifurcate depression in front, a longitudinal depressed line on each side from the anterior part to the occiput; antennæ pale yellow, slightly clavate, the first joint large, the remainder slender; trabeculæ small and acute; prothorax about the width of the head, transverse, pale yellow-white, channelled in the centre, lateral margin with a broad pitch yband; metathorax large, sub-quadrate, the posterior margin produced and angular, channelled in the centre, a broad pitchy humeral fascia extending to the base; abdomen claviform, the sutures, the first three segments slightly angular, lateral margin with a sinuated pitchy fascia; legs pale yellow, and thick, posterior femora acutely dentate; ungues chestnut. Length $\frac{1}{2}$ ♂ $\frac{2}{3}$ ♀.

The only examples of this species which I have seen were communicated by W. M. Tweedy, Esq. of Truro, who found them upon the Gray Phalarope (Phalaropus lobatus).

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40. Nirmus elongatus.—*Denny.* (Louse of the House Martin.)

Plate VII. Fig. 4.

Elongate, testaceous, shining, and smooth; head conical, much produced in front.

Head long, conical, clypeus much produced, with a semicircular depression at the extremity, and a bifurcated line passing down to a somewhat horse-shoe shaped depression on the vertex; antennæ filiform, rather short; trabeculæ acute; prothorax transverse, channelled in the centre; metathorax the width of the head, transverse, lateral mar-

gin rotundate, posterior slightly produced, and strongly ciliate; abdomen very much elongated; legs rather short, anterior femora large and rotundate. Length 1

I obtained a few specimens of this species from a House Martin (Hirundo urbica) killed at the village of Ilkley, in the West Riding of Yorkshire, which are the only specimens I have seen.

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41. Nirmus hypoleucus. (Louse of the Goatsucker.)

Plate VI. Fig. 8.

Cinnamon-coloured, shining, and smooth; clypeus with a bifurcate impression; antennæ and legs fulvous yellow, lateral margin of the head, thorax, and abdomen deep chestnut; abdomen whitish beneath.

Nirmus hypoleucus. Nitzsch. MSS.

Head large, oblong, sub-conical; clypeus rotundate, with a pale bifurcate impression extending into the vertex, orbital space and longitudinal space passing to the occiput, deep chestnut, base truncate, with several long hairs on each side; antennæ long, slender, filiform, the second joint the longest; trabeculæ very minute; prothorax about one-third the length of the head, sub-quadrangular; metathorax trapezoidal; abdomen long and sub-claviform, last segment very small, sutural margin ciliate and paler, lateral margin deep chestnut; legs long and slender, anterior pair very short, nearly concealed under the occiput. Length $1\frac{1}{2}$.

Of this very rare species I have seen only my own specimen which I took from a Goatsucker (Caprimulgus Europæus). Dr. Burmeister, who very obligingly forwarded me a drawing of this insect, made by the late Professor Nitzsch, states that it is equally rare in Germany, and that although the latter had been several years industriously collecting this tribe of insects, he had met with only three specimens.

42. Nirmus podicepis.—*Denny*. (Louse of the Grebe.)

Plate X. Fig. 9.

Elongate; head and thorax pale ochraceous yellow; abdomen pale, yellow-white, each segment with a triangular black mark on the side.

Pediculus Colymbinus? Scopoli, Faun. Carniol. 384. n. 1045.

Head elongate, conical; clypeus produced, a transverse fascia in front, an interrupted lateral band, and two longitudinal impressed lines at the occiput, deep chestnut; vertex depressed, base concave, temporal lobes produced; eyes flat, and rather obscure; antennæ slender, pale, yellow; trabeculæ fuscous, short, and conical; prothorax as wide as the head, lateral margin rotundate and black, centre channelled; metathorax oblong, sub-trapezoidal, with a black lateral fascia, posterior margin rotundate, setose at the lateral angles; abdomen lanceolate, each segment with a triangular black patch on the lateral margin, extending towards the median line; legs rather thick, pale, testaceous, yellow. Length 1.

I have found this species upon the Little Grebe (Podiceps minor), and received specimens from my brother taken upon the Great-crested Grebe (Podiceps cristatus), in Norfolk, also a single specimen from the Red-necked Grebe (Podiceps rubricollis), which I have been much perplexed with, whether to consider as a variety only of the present, or a distinct species. It agrees with the present species, in size, form, and general character, but differs as follows:—The head and thorax are deep fulvous yellow; the abdominal segments bright fulvous on each side, with the triangular lateral patches deep chestnut. This difference however is not greater than we find between the adult and immature state of some species, which I almost suspect these will prove;

the only objection to this supposition is that only one specimen of one kind has been found, and several of the other, and the single example was upon a different species of bird, although of the same genus to those which supplied the many. It appeared to me preferable to record the instance and leave it for further research to decide, than to constitute it a distinct species.

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43. Nirmus junceus. (Louse of the Lapwing.)

Plate IX. Fig. 5.

Fuscous smooth, shining, and pubescent; head elongate; antennæ sub-cordate, lateral margin of the thorax and abdomen black, stigmatic spaces somewhat fulvescent, anterior femora very large.

Nirmus junceus? Scopoli Faun. Carniol. 384. n. 1048.

Head elongate, conical; clypeus produced, with a subquadrate depression anteriorly, lateral margin and triangular spot before the antennæ black, vertex depressed, base sub-truncate; eyes small, obscure; antennæ pale chestnut, sub-clavate, the second joint the longest, ob-conical; trabeculæ very short; prothorax subquadrate, lateral margin rotundate; metathorax wider behind than in front, posterior margin produced, subangular in the centre, lateral with a broad black patch; abdomen claviform and acute, slightly fulvescent on each side, centre fuscous, the lateral margin of each segment with a black fascia, and suture of the first segment angular; legs pale chestnut; anterior femora large and sublobate. Length $\frac{3}{4}$.

This species, which I suspect to be Scopoli's *junceus*, I have found upon the common Lapwing (Vanellus cristatus); my friend William Thompson, Esq. of Belfast, has found it upon the Greenshank (Totanus glottis) and the Wild Swan (Cygnus ferus).

44. Nirmus numenii.—*Denny.* (Louse of the Curlew.)

Plate IX. Fig. 6.

Obscure chestnut, shining and smooth; head oblong, sinuated before the eyes; metathorax sub-trapezoidal; abdomen with a deep fuscous shade down the centre.

Head oblong, sub-conical, clypeus rotundate and testaceous, lateral margin sinuated before the eyes, with two dark impressed diagonal lines from the antennæ to the occiput; eyes very flat; antennæ slender, filiform, pale, testaceous yellow; trabeculæ very small; prothorax nearly aswide as the head, quadrate posterior margin rotundate, centre channelled; metathorax sub-trapezoidal, posterior margin setose; abdomen claviform, darker than the head and thorax, with a fuscous shade down the median line; legs rather stout, pale chestnut, anterior femora in the male enlarged, sub-lobate, rotundate, posterior femora somewhat angular. Length ♂ 1 ♀ $1\frac{1}{3}$.

Communicated by William Thompson, Esq. from the Curlew (Numenius arquata), from which bird I have also obtained it in Leeds, as well as the Coot (Fulica atra).

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45 Nirmus phæopi.—*Denny.* (Louse of the Whimbrel Curlew.)

Plate X. Fig. 7.

Pale ochraceus, shining and smooth, lateral margin pitchy, sutural margin pale; metathorax sub-trapezoidal, posterior margin acuminate.

Head oblong, conical, sinuated before the eyes, fulvous, lateral margin pitchy-black, with a transverse impressed line anteriorly, and two longitudinal lines from the antennæ to the occiput, base concave; antennæ slender, filiform, pale fulvous; trabeculæ small and acute; prothorax

transverse, rotundate, channelled; metathorax sub-trapezoidal, posterior margin acuminate and setose, a pitchy cuneiform humeral patch on each side; abdomen slender, sub-claviform, each segment with a pitchy black lateral margin, the median line obscure chestnut, sutures pale; legs rather thick, fulvous. Lenth ♂ ¾ ♀ 1.

Found on the Whimbrel (Numenius phæopus) at Truro, by Mr. Tweedy, on the Pigmy Curlew (Tringa subarquata) at Carlisle, by Mr. Heysham, and in Norfolk by my brother.

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46. Nirmus holophaeus. (Louse of the Ruff.)

Plate X. Fig. 10.

Chestnut, shining and smooth; clypeus obtuse; abdomen cylindrical; sutural annuli pale; legs thick.

Nirmus holophaeus. Burmeister Handbuch ii. pt. ii. p.427. sp. 3.

Head conical, with a deep fuscous triangular patch on each side before the antennæ, and two depressed lines at the occiput; antennæ filiform, the second joint the longest; prothorax sub-quadrangular, lateral margin rotundate, depressed on each side anteriorly, centre with a depressed line; metathorax the width of the head, subquadrate, anterior margin somewhat rotundate, with a fuscous humeral spot on each side, produced in the centre, and angular; abdomen elongate, sub-cylindrical, apex obtusely ovate, each segment with broad transverse deep chestnut band, sutural margins prominent; legs thick, posterior subangular. Length 1.

I have found this species upon the Ruff (Machetes pugnax) in Yorkshire, and my brother has sent me specimens from the same bird killed in Norfolk. Dr. Burmeister, besides the Ruff, mentions the Pigmy Curlew and the Turnstone

as being infested with this species. In Belfast Mr. Thompson found it upon the Knot (Tringa Canutus).

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47. Nirmus cingulatus. (Louse of the Godwit.)

Plate XI. Fig. 3.

Bright chestnut, shining and smooth; head conical, with two lateral spots, and sub-angular striæ from the base of the antennæ to the occiput; the first seven segments of the abdomen, with a pitchy transverse clavate fascia on each side.

Nirmus cingulatus? Burmeister Handbuch ii. pt. ii. p. 428?

Head conical; clypeus produced, base rotundate, slightly setose, an oblong deep chestnut patch on each side before the antennæ, with a transverse impression at the vertex, and a deeply impressed sub-angular striæ from the antennæ to the occiput; antennæ slender, filiform, pale fulvous; prothorax transverse; metathorax sub-quadrate, anteriorly rotundate, posteriorly produced, angular, and setose; abdomen lenticular, transversely banded with deep chestnut, sutures pale, the first seven segments with a short, pitchy, club-shaped fascia on each lateral margin, encircled with a pale areola; legs pale chestnut, rather thick. Length 1.

Dr. Burmeister, in his admirable Handbuch der Entomologie, quotes a *Nirmus cingulatus* as the parasite of the Limosa Melanura, without, however, giving any specific character. I have ventured to presume this may be the species alluded to, from having received it through the zealous exertions of my friend Mr. Thompson, whose assistance I have so repeatedly to record, who found it upon the Black-tailed Godwit (Limosa melanura), at Belfast, a second example, and by far the finest I have seen, was forwarded by Mr. Heysham from Carlisle, who found

it on the Bar-tailed Godwit (Limosa rufa); a third was sent me by my brother, taken from a specimen of the Ruff (Machetes pugnax).

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48. Nirmus obscurus?

Plate X. Fig. 6.

Obscure chestnut, shining, smooth, and pubescent; clypeus much produced; head with two semicircular black bands before the antennæ, and two longitudinal impressed lines at the occiput, the first seven segments of the abdomen with the lateral margin pitchy black.

Nirmus obscurus? Burmeister Handbuch ii. pt. ii. p. 427. spe. 1.?

Head very long, conical; clypeus much produced and narrow, vertex concave, lateral margin two impressed lines at the occiput, and semicircular fascia in front, pitchy black, temporal angles rotundate and finely setose; antennæ long and filiform; trabeculæ very short; prothorax small, suboval; metathorax the width of the head, anteriorly rotundate, posterior margin angular and produced in the centre, setose; abdomen sub-lenticular, deep chestnut; sutures pale, the first seven segments with a black erose lateral margin; legs fulvous. Length $\frac{1}{2}$.

This species is the most extensively dispersed of any Nirmus with which I am acquainted. It has been found on the Sanderling (Calidris arenaria), Dunlin (Tringa variabilis), Little Stint (Tringa minuta), Curlew (Numenius arquata), Black-tailed and Bar-tailed Godwits (Limosa melanura and rufa), Scaup Duck (Fuligula marila), by Mr. Thompson at Belfast. On the Black Tern (Sterna nigra), Green Sandpiper (Totanus Ochropus), Common Sandpiper (Totanus Hypoleucos), by the Rev. L. Jenyns and Mr. Tweedy, and on the Pigmy Curlew (Tringa subarquata), by Mr. Hey-

sham, on the Kentish Plover (Charadrius Cantianus), by Mr. G. R. Denny, and Dr. Burmeister gives the Wood Sandpiper (Totanus glareola).

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49. Nirmus fissus. (Louse of the Little-Ringed Plover.)
Plate X. Fig. 8.

Obscure chestnut, shining, and smooth, lateral margin black; clypeus obtuse; legs very thick.

Nirmus fissus? Nitzsch Germ. Mag. iii. p. 291. Steph. Cat. pt. ii. 291. Burmeister's Handbuch, ii. pt. ii. p. 427. spe. 4.—Nirmus crassipes, Denny MSS.

Head and thorax chestnut, the former with a depression in front, and two lines from the antennæ to the occiput; clypeus obtuse, ochraceous, lateral margin black, sinuated before the eyes, base concave; antennæ short, thick, and subfiliform, the first two joints the largest and cylindrical; trabeculæ very small and acute; eyes obscure; prothorax transverse, channelled in the centre; abdomen sub-clavate in the male, pyriform in the female, dull chestnut, the first and last segments lighter, lateral margin black; sutures pale; legs thick, pale chestnut; femora much enlarged, superior margin dusky, posterior pair sub-dentate beneath. Length $\frac{1}{2}$.

For examples of this species I am indebted to Mr. Mansfield of Birmingham, who obtained them from a specimen of the Little Ringed Plover (Charadrius minor), which came into the possession of Joseph Gurney, Esq. of Earlham, near Norwich; Mr. Thompson found the same species upon the Redshank (Totanus calidris) at Belfast.

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50. Nirmus tenuis (Louse of the Sand-Martin.)
Plate XI. Fig. 9.

Obscure chestnut, shining, and smooth; clypeus obtuse,

sub-emarginate, stigmatic areolas pale, lateral margin of the abdomen black.

Nirmus tenuis. Burmeister Handbuch ii. pt. ii. p. 429. spe. 14.

Head oblong, sub-conical; clypeus obtuse, with a bifurcate depression passing to the vertex, lateral margin sinuated before the eyes, with a quadrangular black spot at the base of the antennæ, and two diagonal lines from thence to the occiput; eyes obscure; antennæ slender, filiform, pale chestnut, the second and third joints fuscous at the base; prothorax light chestnut, transverse, channelled in the centre; metathorax trapezoidal, posterior margin acutely angular, and much paler than the upper; abdomen sub-claviform, dull chestnut, stigmatic spaces paler and bright, lateral margin pitchy black; legs fulvous; anterior femora enlarged and rotundate, with a pitchy spot at the apex Length 1.

Parasitical upon the Sand-Martin (Hirundo riparia).

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51. Nirmus scolopacis.—*Denny*. (Louse of the Snipe.)

Plate XI. Fig. 8.

Bright chestnut, smooth, and shining; clypeus broad, truncate, lateral margin of the head with a deep sinus; abdominal segments, with an angular black spot on the lateral margin.

Head oblong, sub-cylindrical; clypeus ochraceous, truncate, lateral sinus large, pitchy black, vertex concave; antennæ filiform, ferruginous yellow, the second joint the longest, seated in the lateral sinus; eyes small, fuscous; prothorax the width of the head, sub-quadrangular; metathorax quadrate, lateral margin slightly concave, posterior acutely produced in the centre, setose; abdomen sub-claviform chestnut, sutural margins and dorsal line pale, the first

seven segments with a pitchy black triangular patch on the lateral margin; legs pale chestnut, long and rather slender. Length ♂ ¾ ♀ 1.

Communicated by Mr. Wallace from Douglas, Isle-of-Man, who found it upon the Common Snipe (Scolopax gallinago).

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52. Nirmus cyclothorax. (Louse of the Mountain Finch.)

Plate XI. Fig. 6.

Pale fulvous-yellow, lateral margin deep chestnut; prothorax sub orbicular; metathorax transverse, posteriorly truncate. Length ¾.

Nirmus cyclothorax. Burmeister Handbuch ii. pt. ii. p. 429. spe. 10.

Head and thorax pale fulvous-yellow, the former subconical, the lateral margin sinuated before the eyes, and deep chestnut, a semicircular depressed transverse line across the vertex; eyes prominent; antennæ slender filiform, the second joint the longest; prothorax narrower than the head, somewhat orbicular, with a broad chestnut margin; metathorax as wide as the head narrower before than behind, lateral angles acute and chestnut, posterior margin truncate; abdomen oblong, sub-claviform, pale, yellow-white, median line slightly fuscous, lateral margin serrulate, yellowish, with a chestnut fascia to each segment; legs pale yellow, femora rather thick; ungues deep fulvous. Length ¾.

The only specimen of this species I have seen was forwarded by T. C. Heysham, Esq. of Carlisle, taken on the Mountain Finch, or Brambling (Fringilla Montifringilla).

*** The following species, infesting British Birds which I have not seen, are enumerated by Dr. Burmeister in his Handbuch der Entomologie, vol. ii. pt. ii. pp. 427—430.

53. Nirmus furvus. Lineæ albæ ab antennarum basi versus occiput productæ intus convexæ; fasciis abdominalibus in mare 1-5 in femin. 1-7 fissus. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Totanus maculatus. Totanus glottis et Strepsilus interpres.

54. Nirmus nycthemerus. Pedibus cinereis; segmentis abdominalibus 3-6 nigris. Long. $\frac{1}{2}$. Pediculus Sternæ. Fabr. Syst. Ant. 346—36. Hab. Sterna minuta.

55. Nirmus eugrammicus Segmentis abdominalibus fascia basali transversa nigra. Long $\frac{1}{2}$—$\frac{2}{3}$. Hab. Larus minutus.

56. Nirmus punctatus. Segmentis abdominalibus utrinque puncto basali necnon lineola transversa media nigris. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Larus ridibundus.

57. Nirmus stenopyx. Clypeo bicornuto, vertice bistriolato segmentis corporis omnibus utrinque nigro-marginatis, mediis abdominalibus in mare 2 punctatis. Long. $1\frac{1}{4}$—$1\frac{1}{3}$. Hab. Anas rufina.

58. Nirmus cruciatus. Maculis abdominalibus fuscis argute marginatis, limbo externo punctoque medio pallidiori flavis, $\frac{3}{4}$. Hab. Lanius collurio.

59. Nirmus varius. Gracilior, capite obscuriori, maculis abdominalibus medio subcontiguis, omnibus 2-punctatis in mare, mediis furcatis in femina. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Corvus corone et Corvus monedula.

Sub-Genus III. GONIOCOTES.—(*Burmeister.*)

Goniocotes, Burmeister. Goniodes, Sect. 8, Nitzsch.

SUB-GENERIC CHARACTER.

Head large, clypeus broad and rotundate, posterior margin triangular on each side, the outermost *generally* bearing two long strong bristles; *trabeculæ* none; *antennæ* filiform, simple in both sexes; *abdomen* broad, the sutures faint, and ill defined in the centre.

This sub-genus infests birds of the Rasorial Order only.

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1. Goniocotes compar. (Louse of the Pigeon.)

Plate XIII. Fig. 2.

Head large, acutely angular behind, setiferous; abdomen white, broad and obovate; margin ferruginous.

Goniocotes compar. Burmeister Handbuch, ii. pt. ii. p. 431. spe. 2.—Goniodes compar. Nitzsch. Germ. Mag. iii. p. 294. Steph. Cat. pt. ii. p. 333.—Pediculus Bidentatus, Scop. Ent. Carniol. 385. n. 1050.

Head bright, tawny-yellow; clypeus broad, circular, with two short deep chestnut impressed fascia before the antennæ, lateral margin deeply sinuate, with an angular chestnut spot before the eyes, and produced posteriorly into an acute angular process, bearing two long bristles, base contracted, with two angles, occiput rotundate, with two deep chestnut longitudinal impressed fascia united at the base; eyes prominent and pale; antennæ nearly filiform, the first joint large and sub-globose, the second considerably smaller, subclavate, the third about equal and cylindrical, last two shorter, the apex with a small fasciculus of hairs;* prothorax

* While examining living specimens of this species, I observed that though the last four articulations of the antennæ appeared to have free motion in all directions, the basal one in its large cavity (resembling a ball and socket) seems to be seldom moved otherwise than in an upward and downward direction.

tawny, conical, posterior margin circular; metathorax much wider, transverse, lateral margins rounded, and posterior obtusely angular in the centre; abdomen pale ashy-white, obtusely ovate and depressed, a broad ferruginous marginal band, extending on each side from the anus to the prothorax, the sutures deep chestnut on the lateral margin; legs pale tawny-yellow, anterior femora large; tibiæ long, with several strong spines towards the base. Length 1 to 1⅓.

A common parasite on all varieties of domestic Pigeons, the Rev. L. Jenyns has sent it to me from the Stock Dove (Columbus Œnas) and Ring Dove (C. Palumbus). Mr. Tweedy sent me some specimens from the Turtle Dove (C. Turtur), and I have also found the same on the last bird myself, which I am disposed to consider as a *variety* of the G. Compar. It resembles the latter in every respect, except in being uniformly smaller. It is not the immature insect, because young specimens of *Compar* of the same dimensions are not so perfect in symmetry, and much paler in colour. Although I here give it as a variety, I am by no means satisfied, but considered it better to do thus for the present than be accused of unnecessarily increasing the number of species. I may remark in favour of its specific identity, that although I have found it upon the other kinds of Pigeons, I never found the true *Compar* upon the Turtle Dove.

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2. Goniocotes hologaster. (Louse of the Domestic Fowl.)

Plate XIII. Fig. 4.

Head, thorax, and legs pale-yellow, with pitchy black marginal bands and spots; abdomen with pale ash-coloured lateral fasciæ, bordered with black.

Goniocotes hologaster. Burmeister Handbuch ii. pt. ii. p. 431. spe. 3.—Gonoides hologaster. Nitzsch. Germ. Mag. iii. p. 294. Steph. Cat. pt. ii. p. 333.—Ricinis Gallinæ, De Geer, vii. pl. iv. fig. 15.

Head sub-orbicular, clypeus broad and rotundate, with a pitchy margin, from which arise on each side a tongue-shaped oblique black fascia, temporal fossæ deeply excavated, with a quadrangular black patch in the centre, lateral margin sinuated at the base, with two black spots, occiput sub truncate and black; eyes prominent and black; antennæ pale yellow, the second joint very long, subclavate; prothorax small, transverse, anterior margin rotundate and black; metathorax as broad as the head, lateral margin round, posterior produced in the centre, and sub-angular, anteriorly, with two broad black fasciæ; abdomen large, oval, pale yellow-white, the first segment large, with a pale ash-coloured humeral patch, the remainder small and equal, with transverse sinuated fasciæ, margined with black; legs long; femora and tibiæ, with the superior margin black. Length $1\frac{1}{2}$.

Parasitical upon the Domestic Fowl (Gallus domesticus), though not very abundant.

Three other species recorded by Nitzsch and Burmeister I have little doubt are natives of the British Isles. The first *G. rectangulatus* upon the Peacock on the authority of the former; the second *G. microthorax* upon the Partridge also by the same author, the specific characters of which are not given; and the third *G. astrocephalus* upon the Quail, which Dr. Burmeister in his Handbook of Entomology thus describes:—"*Pallidus, occipite arcuato 2-dentato, macula fusca trigona in quovis arcu; segmentis abdominalibus utrinque linea repando-dentata. Long.* $\frac{2}{3}$—1." For the two former I have searched in vain, for the latter I have never had the opportunity, for the want of specimens of the Quail to examine.

Sub-Genus IV. GONIODES.—(*Nitzsch.*)

Goniodes, Nitzsch, Burmeister, Stephens, Children.

SUB-GENERIC CHARACTER.

Head large, temporal angles prominent and acute; *antennæ* in the males cheliform, the first joint very large and thick, the third considerably smaller, recurved towards the first, and forming a claw, the fourth and fifth very small, arising from the back of the third; *trabeculæ* none; *abdomen* very broad and flat, especially in the males.

Found on birds of the Rasorial Order only.

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1. Goniodes falcicornis. (Louse of the Peacock.)

Plate XII. Fig. 1 and 3.

Bright chestnut-yellow and shining; head large, subquadrate; occipital angles acuminate; the first joint of the antennæ in the male very large and dentate; abdomen broad and obtuse, light tawny yellow, with transverse tongue-shaped lateral fasciæ of a deep liver-colour, last segment bright chestnut.

Goniodes falcicornis. Nitzsch. Germ. Mag. iii. p. 293. Burmeister Handbuch, ii. pt. ii. p. 432. Stephens's Syst. Cat. pt. ii. p 333.—Pediculus Pavonis, Linn. Syst. Nat. ii 1019. Fabr. Syst. Ent. n. 27. p. 809. Spec. Inst. T. ii. n. 31. p. 481. Mant. Inst. T. ii. n. 37. p. 370. Schrank. Inst. Aust. n. 1028. Frisch· Inst. P. viii. tab. 4. Panz. F. 51. fig. 19. ♀. Stew. Elem. Nat. Hist. ii. 280.—Turton, iii. 698. The Louse of the Peacock, Albin. Spi. pl. 50. fig. inf. Shaw. Gen. Zool. vi. pl. 119. fig. inf.—Pulex pavonis, Redi. Ex. pl. xiv. ♂.—Nirmus tetragonocephalus, Olfers. 90.—Ricinis Pavonis, Kirby and Spence, Int. Ent. ii. pl. 5. fig. 3. ♂.

Head large, subquadrate; clypeus broad and rotundate, with two oblique deep chestnut fasciæ, lateral margin deeply sinuated before the eyes, base rotundate, occipital angles acuminate, occiput convex, with two deep chestnut diagonal bands; eyes prominent; antennæ large in the males, the

first joint, with a large tooth on the internal edge, second cylindrical apex oblique, third long and recurved, fourth and fifth very small, in the female filiform; prothorax narrower than the head, conical; metathorax nearly twice the width, convex lateral margin rounded, posterior produced and acuminate; abdomen large, nearly orbicular in the male, obtusely ovate in the female, pale, tawny-yellow, with transversely oblique tongue-shaped lateral fasciæ of a deep liver-colour, stigmatic orifices pale, last segment bright chestnut; legs pale, ferruginous yellow; femora thick, tibiæ armed on the inferior edge, with several stiff spines. Length ♂ 1½ ♀ 2.

This beautiful parasite is common upon the Peacock (Pavo cristatus), and may be found after the death of the bird congregated in numbers about the base of the beak, and crown of the head. The female has the head larger than the male, more rotundate, the temporal fossæ less distinct, the abdomen elongate ovate, with the lateral fasciæ deeper coloured, broader and confluent. The insect figured at No. 3, I have also found in tolerable plenty upon the Peacock, and supposed it was a distinct species, and as such I figured it, but upon referring to Dr. Burmeister, he states it to be only the *young* of the G. Chelicornis, and as such, therefore, I now give it, proving that these insects alter their form or change their appearance during the period of casting their skins more than has been generally believed. The antennæ of the male especially (fig. *e.*) differs considerably from that of the adult (fig. *c.*).

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2. Goniodes stylifer. (Louse of the Turkey)

Plate XII. Fig. 2.

Bright chestnut-yellow, and shining, external occipital

angles very long, pointing backwards; thorax acutely angular, margined with black; abdomen pale yellow-white, lateral transverse fasciæ confluent, deep liver-colour.

Gonoides stylifer. Nitzsch. Germ. Mag. iii. p. 294. Burmeister Handbuch, ii. pt. ii. p. 432. Steph. Cat. pt. ii. p. 333.—Pediculus Meleagris, Schr. En. Ins. Austr. 504. 1029.

Head large; clypeus rotundate, with a pitchy margin, posterior angles considerably produced, conical and acute, occiput contracted and truncate, lateral margin black; eyes pale, large, and flat; antennæ pale chestnut, the first joint in the male large and conical, with a strong tooth on the inferior edge, third recurved or produced towards the projection on the first, fourth and fifth very small, inserted at an acute angle in the back of the third (fig. *e.*), in the female simple and setaceous (fig. *f.*); prothorax long and conical, acutely angulated on each side at the base and truncate; metathorax large, acutely triangular, with a black marginal band; abdomen turbinate, pale yellow-white, the first and seventh segments, with the lateral fasciæ of the intermediate, which are confluent, bright, liver-brown, the lower margin of each segment nearly black, stigmatic orifices and sutures pale, last two segments bright chestnut, lateral margin with tufts of long hairs; legs thick and strong. Length $1\frac{1}{4}$.

Common upon the Turkey (Meleagris Gallopavo), frequenting the head, neck, and breast, a very beautiful species, and readily distinguished from all the others of the sub-genus by the horn-like projections of the back part of the head, as well as the peculiar form of thorax. The males of this and all the other species of Goniodes use the first and third joints of the antennæ with great facility, acting the part of a finger and thumb.

3. Goniodes colchici.—*Denny*. (Louse of the Pheasant.)

Plate XII. Fig. 4.

Bright chestnut-yellow; head subquadrate, temporal angles obtuse; thorax with a broad ferruginous margin; abdomen pale, yellow-white, nearly orbicular, each segment, excepting the first and last two, with a pitchy black arcuate fascia.

Pediculus Phasiani? Fabr. Syst. Inst. ii. 482. 34. Mant. Inst. 310.

Head nearly quadrate; clypeus broad and circular, with a deep chestnut margin, terminating in an angular patch before each antennæ, temporal angle prominent and obtuse, with a dark spot above and below each; occiput sinuated, truncate, with a dark bi-lobed patch at the base; eyes pale, rather obscure; antennæ similar to the preceding, but without the tooth-like projection to the first joint in the male. In the female the second joint is the longest; prothorax transverse, base truncate, lateral margin ferruginous; metathorax nearly as wide as the head, lateral margin very rotund, with a broad ferruginous hook-shaped band, posterior margin much produced and obtuse; abdomen broad, flat, shining, and pubescent, apex very obtuse, the first segment with a ferruginous margin, the six following with an arcuate pitchy black oblique fascia, last segment ferruginous; legs pale, chestnut yellow, rather thick; ungues and external margin of tibiæ chestnut. Length ♂ 1 ♀ 1.

Not uncommon upon the Pheasant (Phasianus Colchicus).

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4. Goniodes ortygis.—*Denny*. (Louse of the Virginian Colin.)

Plate XIII. Fig. 6.

Elongate, pale yellow-white; head subquadrate, temporal angles obtuse; prothorax semicircular; metathorax trans-

verse; abdomen nearly white, each segment, except the first and two last, with a chestnut or pitchy black spatuliform fascia.

Head and prothorax pale yellow, the angles of the former shaded with chestnut; clypeus convex, with a short curved fascia, a large subconical patch before the eyes, and another between the temporal angles, on each side, pitchy black, occiput concave, with two black conical spots; eyes large, prominent; antennæ pale, yellow, similar to the preceding; prothorax small, semicircular; metathorax transverse, sides rotundate, base subangular; abdomen nearly white, the first segment the largest, the six following with a spatuliform oblique fascia, which together with the margin of the first of the thorax is chestnut in the male, and deep pitchy black in the female; legs pale yellow; tarsi chestnut; Length ♂ ¾ ♀ 1¼.

As the Ortyx Virginiana is now included in the British Fauna, I considered its parasite ought to find a place in this monograph, and for the opportunity of figuring it I am indebted to Abraham Clapham, Esq. who supplied me with specimens obtained from some of these birds which he imported from America, for the purpose of turning loose on a manor near Selby. Although this species resembles in some respects *G. Colchici* and *Tetraonis*, it is readily distinguished by its more slender form and smaller size, as well as the general colour of its several parts.

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5. Goniodes dispar. (Louse of the Partridge.)

Plate XII. Fig. 5.

Bright chestnut and shining; head with the temporal margin produced and acutely angular; antennæ with the first joint in the male comparatively small, third securiform (fig. *n*.); abdomen pale yellow, obovate, or obtusely truncate posteriorly, lateral margin ferruginous.

Goniodes dispar? Nitzsch. Germ. Mag. iii. p. 294.—Goniodes dispar? Burmeister Handbuch, ii. pt. ii. p. 432. spe. 1.

Head bright chestnut; clypeus convex, temporal margin sinuated anteriorly, with a black band before the antennæ, posteriorly produced and acutely angular, occiput truncate, with a deep chestnut margin, vertex depressed; eyes prominent, large, ash-coloured; antennæ pale, the first joint in the male comparatively small and conical, second long and clavate, third securiform, fourth and fifth small; prothorax transverse; metathorax sub-triangular, lateral margin with a broad deep chestnut hook-shaped band, posterior angle acute; abdomen pale, yellow, and hairy, obovate, or obtusely truncate, lateral margin with a broad ferruginous band, and a transverse pitchy line at the sutures, segments well defined; legs pale, ferruginous, with a dark chestnut band on the superior surface. Length ♂ $\frac{3}{4}$.

I have seen only two males of this species, which I took from two different specimens of the Common Partridge (Perdix cinerea). I have ventured to place it as the *Dispar* of Nitzsch and Burmeister, though not without doubt, as to the identity of the species. The peculiar form of the third joint of the antennæ would have led me to suppose it was the *G. securiger* of the latter author, had that species been parasitical upon a British bird, but as the Perdix petrosa is given as its nidus, which has never occurred in Britain, its identity with the latter is barely probable.

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6. Goniodes chelicornis. (Louse of the Capercaillie.)

Plate XIII. ~~Fig. 8.~~ *Fig 3.*

Tawny-yellow, smooth, and shining; head very wide, temporal angles obtuse; metathorax large, posterior angle sub-truncate; abdomen broad, pale, yellow-white, lateral fasciæ spatulaform, and deep chestnut.

Goniodes chelicornis. Nitzsch. Germ. Mag. iii. p. 293. spe. 2.—Goniodes chelicornis. Steph. Cat. pt. ii. p. 333.—Goniodes chelicornis. Lyonet, Mem. du Muse. t. 18. p. 268. pl. 12. fig. 7.—Goniodes chelicornis. Children's Appen. to Back's Land Expe. p. 539.

Head and thorax tawny-yellow, the former in the female as wide as the abdomen; clypeus broad and convex, with two deep chestnut fasciæ before the antennæ, temporal margin slightly sinuated, superior angles very prominent and obtuse, occiput concavo-truncate, with a deep chestnut margin, vertex concave; eyes large, and antennæ pale chestnut, the first joint in the male very thick, obtusely denticulate on the inferior side, second conical, third somewhat panduriform; prothorax transverse, posterior margin convex; metathorax large, sides convex, posterior angle sub-truncate; abdomen oval, pale, yellow-white, finely pubescent, lateral margin tawny-yellow, each segment, except the first and last two, with a transverse deep chestnut spatulaform fascia; legs tawny yellow, thick, and strong. Length ♀ 1½ ♂ 1.

This species I have found two or three times upon the Capercaillie (Tetrao Urogallus), and although I feel satisfied that it is quite distinct from the following species, it is extremely difficult to reduce the distinctive characters to words. The males bears a strong resemblance to each other. In the females, however, the difference is clearly seen in the larger and broader size of the G. *Chelicornis* over the G. *Tetraonis*, the magnitude and lateral proportions of the head, also the posterior angle of the metathorax, &c.

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7. Goniodes tetraonis.—*Denny.* (Louse of the Black and Red Grouse.)

Plate XIII. Fig. 3.

Chestnut-yellow, shining, and smooth; head subquadrate, temporal angles acute; metathorax narrower, and more sinuated than the preceding.

Head subquadrate, pale, chestnut-yellow, the angles shaded and much deeper chestnut, less in width in the female than the abdomen; clypeus convex, margin, together with the anterior bands, chestnut, temporal angles less produced than the preceding, but more acute, occipital markings pitchy, vertex concave; antennæ pale, yellow, and slender in the female, the first joint in the male large and thick, margin entire; eyes promiment and black; prothorax transverse, anteriorly convex; metathorax with the anterior margin convex, with a dark chestnut uncinate fascia, posterior sinuated and much produced; abdomen pale, yellow-white, obovate, lateral margin bright chestnut, each segment except the antepenultimate with a pitchy sutural, somewhat club-shaped fascia; legs chestnut yellow, the superior edge dark, thick, and strong; femora large; tibiæ spiny. Length ♂ 1 ♀ 1⅛.

Common upon both the Black and Red Grouse (Tetrao Tetrix and Scoticus); upon the Willow or Hazel Grouse (Tetrao Saliceti) I find a similar but distinct species rather broader in the abdomen, and of much darker colour. What infests the Ptarmigan (Tetrao Lagopus) I have never been able to ascertain.

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8. Goniodes dissimilis. (Louse of the Domestic Fowl.)

Plate XII. Fig. 6.

Tawny, smooth, shining, and pubescent; head large, subquadrate, temporal angles prominent, with two broad chestnut fascia before the antennæ; prothorax short and transverse; abdomen large, lateral fasciæ confluent, with deep chestnut sutural bands on the superior margin of each segment.

Goniodes dissimilis. Nitzsch. Germ. Mag. iii. p. 294. Goniodes dissimilis. Steph. Syst. Cat. pt. ii. p. 333.

Head very large, especially in the female; clypeus broad, convex, and dark chestnut, with an oblique broad fascia before each antennæ, temporal angles and occiput dark chestnut, vertex concave; eyes pale brown; antennæ fulvous-yellow, filiform in the female; prothorax very short, transverse; metathorax not so wide as the head, rotundate, posterior margin produced and subangular, lateral margin with deep chestnut, uncinate fasciæ; abdomen large, obovate, pale, yellow, and pubescent, the first segment and lateral fasciæ bright tawny-yellow, the latter broad and confluent, sutural margin deep chestnut brown, last segment with two black angular spots; legs thick, pale-yellow, superior margin chestnut. Length ♀ $1\frac{1}{8}$.

I suspect this species is of rare occurrence, as the only specimen which I have examined was communicated by Mr. Thompson from Belfast, and that being a female, I am precluded from describing the characteristics of the male.

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9. Goniodes numidianus.—*Denny.* (Louse of the Pintado.)

Plate XIII. Fig. 7.

Pale straw-yellow, shining and smooth, margined with black; head sub-orbicular; abdomen acuminate, with pitchy-brown interrupted transverse bands.

Head sub-orbicular, deeply sinuated on each side before the eyes; clypeus with a chestnut band in front, terminating in pitchy-black on each lateral angle; eyes prominent and black; antennæ pale yellow, the first joint large and suboval; prothorax subquadrate, with a black fascia on each side, base rotundate; metathorax wider than the head, lateral margin oblique, base subangular and black; abdomen large acuminate, the first five segments with a black lateral fascia, centre with transverse interrupted pitchy bands, last two segments chestnut; legs thick; femora with a pitchy angular

spot at the apex; tibiæ with the external margin pitchy. Length ⅛.

The only specimens of this species I have seen are two males, which I took from off a Pintado (Numida meleagris).

Nitzsch enumerates another species *Goniodes paradoxus*, parasitical upon the Quail (Perdix coturnix), which has never fallen to my lot to examine.

Sub-Genus V. LIPEURUS.—(*Nitzsch.*)

Lipeurus. Nitzsch. Burmeister. Stephens. Children.—*Ornithobius.* Leach.

SUB-GENERIC CHARACTER.

Head moderately large, variable in form, generally narrow and obtusely triangular, occasionally obtusely lyrate; *trabeculæ* none;* *antennæ* obtusely setaceous, the first joint in the male the longest and sometimes very much enlarged, the third more or less reflected, hooked, and small, forming a kind of claw with the first, fourth and fifth, minute, standing at an acute angle with the third, the female with the first three joints the largest and simple, occasionally only the first two enlarged; *abdomen* more or less narrow and elongate, with the apex of the last joint in the male emarginate or deeply cleft, in the female generally truncate; *legs* usually very long.

Infests Birds of the orders Rasores, Grallatores, Natatores, and many of the larger Diurnal Raptores.

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* * * Head rotundate.

1. Lipeurus variabilis. (Louse of the Domestic Fowl.)

Plate XV. Fig. 6.

Dirty-white, smooth, and shining, margined with black;

* In some species the margin of the clypeus is reflected over the base of the antennæ, and looks like the trabeculæ, as in the L. variabilis.

head pale yellow, with a black spot on each side behind the eyes; abdomen with a fuscous interrupted fascia down the centre.

Lipeurus variabilis. Nitzsch. Germ. Mag. iii. p. 292. Stephens's Syst. Cat. pt. ii. p. 332. Burmeister Handbuch ii. pt. ii. p. 434.—Pediculus caponis. Linnæus Syst. Nat. ii. 1020. 33. Faun. Suec. 1960. Fabricius. Syst. Ent. 809. 30. Syst. Inst. 2. 482. 35.

Head quadrate; clypeus semicircular, with a black margin truncate before the antennæ, a black spot behind each eye, and two hook-shaped ones at the occiput, base truncate, angles obtuse, in the male the occiput is much narrower than the clypeus, angles more acute and the whole head longer; eyes prominent; antennæ long, pale yellow, apex chestnut, filiform in the female, in the male the first joint very long, somewhat conical, with a strong blunt tooth on the inferior margin, second cylindrical, third short, internally produced; prothorax quadrate, not so wide as the head, with a black uniform margin; metathorax bilobate, posterior margin angulate, with a fasciculus of hairs on each side proceeding from a fovea, lateral margin black; abdomen long, nearly cylindrical, with a broad black lateral margin and a fuscous interrupted fascia down the centre of variable extent; legs pale yellow, slender, the superior margin dusky; apex of tibiæ and tarsi chestnut. Length $\frac{2}{3}$ to 1.

Common on the Domestic Fowl, preferring the primary and secondary feathers of the wings, among the webs of which they move with great celerity,

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2. Lipeurus polytrapezius. (Louse of the Turkey.)

Plate XV. Fig. 5.

Pale yellow-white, margined with black; head panduriform; abdomen elongate, all the segments but the last with a greyish-brown trapezoidal spot on each side.

Lipeurus polytrapezius. Nitzsch. Germ. Mag. iii. p. 293. Burmeister Handbuch ii. pt. ii. p. 434.—Pediculus Meleagridis. Linnæus, Syst. Nat. ii. 1020. 31. Faun. Suec. 1958. Fabricius, Syst. Ent. 809. 28. Syst. Inst. ii. 482. 32. Frisch. Inst. Aus. 8. tab. 4.

Head long, panduriform; clypeus semicircular, with a black conical band on each side before the antennæ, and spot before the eye, base rotundate, with a narrow black margin; eyes large and prominent; antennæ as long as the head in the male, the first joint large and conical, with a small obtuse tooth at the base, the remainder as in the preceding, in the female the first joint short and thick, second long and conical, remainder growing gradually smaller; prothorax quadrate, and narrower than the head; metathorax long, cylindrical, truncate posteriorly, with a fasciculus of hairs from a fovea on each side; abdomen elongate ovate, pale yellow-white, the segments with a greyish brown trapezoidal spot on each side, margined internally with pitchy-brown, lateral margin together with that of the thorax black; legs long and slender, fulvous yellow, with the superior and inferior margins pitchy-brown. Length ♂ $1\frac{1}{2}$ ♀ $1\frac{3}{4}$.

A common parasite upon the Turkey (Meleagris gallopavo). Their mode of progression is rather singular, as well as rapid. They slide as it were sideways extremely quick from one side of the fibre of a feather to the other, and move equally well in a forward or retrograde direction, which, together with their flat polished bodies, renders them extremely difficult to catch or hold. I have observed that where two or more genera infest one Bird, they have each their favourite localities, for while the *Goniodes stylifer* will be found on the breast and neck of the Bird, the *Lipeurus polytrapezius* will be congregated in numbers on the webs and shafts of the primary wing feathers.

3. Lipeurus gyricornis.—*Denny*. (Louse of the Common Tern.)

Plate XV. Fig. 1.

Chestnut, smooth and shining; head sub-cordate; antennæ longer than the head, the first joint very long and twisted; abdomen obscure chestnut, the sutures pale.

Head and thorax light chestnut, the former sub-cordate; vertex concave, lateral margin pitchy; clypeus deeply emarginate, labium produced; eyes small, prominent and black; antennæ pale, longer than the head, the first joint very long, somewhat flattened and twisted, second about one-third the size of the former and conical, third still less and cylindrical, and only very slightly recurved, fourth and fifth very small; prothorax transverse, anterior part narrowed and rotundate, centre with a broad channel, base convex; metathorax quadrate, slightly sinuated at the shoulders, lateral margin with a pitchy fascia, base truncate; abdomen elongate ovate, dark chestnut, sutures pale ochraceous; legs rather thick, pale chestnut; anterior femora large, margin involute. Length 1.

I have seen only a single specimen of this species which I took from the Common Tern (Sterna Hirundo). Its remarkable antennæ easily distinguishes it from all the other species, in consequence of which, believing it undescribed, I have named it in allusion to the twisted appearance of the large antennæ.

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4. Lipeurus quadripustulatus. (Louse of the Golden and Cinereous Eagles.)

Plate XVI.

Elongate, pale fulvous-yellow, shining and pubescent; abdomen with pitchy-brown bands, marked on each side with a fulvous spot, surrounded with black, the first, sixth,

and seventh in the male, interrupted; superior margin of the legs pitchy-black.

Lipeurus quadripustulatus. Nitzsch. Germ. Mag. iii. p. 293. Step. Cat. pt. ii. p. 332. Burmeister Handbuch, ii. pt. ii. p. 434.

Head oblong; clypeus obtuse, with two small brown spots in front, and a black one on each side, lateral margin slightly sinuated, with an oblong black fascia before the eyes, from which proceed two impressed lines uniting at the base, with several oblique sulci on each side; occiput concave with a black margin; eyes pale yellow, rather flat; antennæ more than half the length of the head, the male with the first joint very large, unequal, second short and cylindrical, the third curved and acute, fourth and fifth very minute, exterior margin black, in the female filiform and slender, wholly of a pale yellow; prothorax sub-conical, with a central depressed line and two foveola at the anterior angles; metathorax wider than the head, quadrate, concave and truncate before and behind, lateral margin sinuate, pitchy-black, extending on the disk at six points so as to leave a somewhat stellate figure in the centre; abdomen elongate ovate, the first seven segments with a pitchy-brown transverse band, terminating on each side in a fulvous spot surrounded with black, in the male the first, sixth, and seventh are interrupted, rarely the whole; legs pale yellow, the anterior pair very short; femora large, second and third pair very long and slender, with the superior margin black; tibiæ of the second pair finely serrated on the inner side; tarsi chestnut. Length ♂ $1\frac{3}{4}$ ♀ 2.

This fine species, I have no doubt, is the 4-*pustulatus* of Nitzsch and Burmeister, though I cannot think the name a happy one, for if it is derived from the pale spots on the lateral margin of the abdomen, there are seven on each side, and if from the small spots on the anterior part of the head, they are not sufficiently prominent to give it a specific appel-

lation. Dr. Burmeister says "*fasciis abdominalibus fusco-nigris, utrinque puncto testaceo notatis;* 1, 6 *et* 7 *interruptis.*" The latter part of this character applies, as I have shown above, *only* to the male, for out of 30 or 40 females, I did not *see* one but what had the fasciæ entire and *vice versa*. This species is recorded as the parasite of the Vultur cinereus and Aquila albicilla; my specimens, however, I took from a Golden Eagle (Aquila Chrysäetos), which had an immense number upon it, but more especially on the quills of the primaries and secondaries. As I found quantities of the Nits and the Insect in all its stages, I could not help noticing the different appearance it had according to its age. In its first stage the whole Insect was a pale yellow-white, next with a narrow black fascia down the lateral margin of each segment of the abdomen, thirdly with fulvous spots surrounded with a fuscous margin down each side but no connecting fascia in the centre of each segment, and after arriving at maturity, the colour and markings varies much as to intensity. In some the lateral spots are a bright fulvous, and in others nearly obscured. This species resembles *L. sulcifrons* somewhat about the head, but is readily distinguished by its larger size, more showy appearance, slender legs, well marked thorax, &c.

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5. Lipeurus sulcifrons.—*Denny.* (Louse of the Cinereous Eagle.)

Plate XIV. Fig. 1.

Pitchy-chestnut, punctured and pubescent; head with several oblique and transverse sulci at the base; abdomen ochraceous, with deep chestnut margin.

Head oblong and obtuse, widest at the base, deep chestnut, anterior part pale ochraceous, with three pitchy-black

spots on each side, and one in the centre, the base with several oblique sulci on each side, a deep tongue-shaped one from the antennæ down to the base, and a series of sigmoid oblong and transverse impressions in the centre; eyes large and prominent; antennæ in the female thick, somewhat setaceous and tawny-yellow, the first three joints the largest; prothorax nearly orbicular, convex and punctured, slightly produced in front with a deep fovea on each side, and one at the base, channelled in the centre; metathorax quadrate, anterior angles obtuse, with a deep humeral sinus on each side, base truncate, and ciliated with strong bristles; abdomen oblong ovate, ochraceous, the sutures paler, with a row of impressed punctures giving origin to setæ, the first seven segments with a lateral transverse band of deep chestnut edged with black; legs thick and strong, obscure chestnut. Length $1\frac{3}{4}$.

I have ventured to name this species in allusion to the beautiful sculpture of the head, from a supposition that it is undescribed, as I have never seen any other specimens than those in my own possession, which I received from my brother, who found them upon the Cinereous Eagle (Aquila albicilla), in Norwich. I have one specimen with the dorsal line nearly white, all those which I possess are females, I am therefore ignorant of the character of the male.

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6. Lipeurus tadornæ. (Louse of the Shieldrake.)

Plate XIV. Fig. 6.

Elongate, milky-white, smooth, and shining; head, thorax and abdomen with black marginal spots; tarsi ferruginous.

Ornithobius tadornæ.—Leach MSS.?

Head cordate, with a semicircular impressed line passing

from the eyes to the vertex, united to two short curved ones at the base; clypeus with a black marginal band, a quadrangular black spot before each eye, and a narrow line on each side at the base; eyes small and black; antennæ thick and filiform, in the female about half the length of the head; prothorax transverse, base rotundate, with two black spots at the lateral angles; metathorax oblong, quadrate, lateral margin concave, with a long cuneiform black spot, base truncate; abdomen depressed, elongate ovate, each segment excepting the first and last two with an oblong cuneiform marginal black patch, the terminal segment ferruginous; legs thick and strong; tarsi ferruginous. Length $1\frac{1}{2}$.

The only examples of this species I have seen were communicated by Mr. Thompson, who took them from off a Shieldrake (Tadorna Bellonii), at Belfast, all of which are females. I have quoted Dr. Leach's MS. name from a supposition that the specimens in the British Museum, named *tadornæ*, are the same species, especially as they are of the same genus.

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* * Head long, obtusely triangular.

7. Lipeurus versicolor. (Louse of the White Stork.)

Plate XV. Fig. 7.

Elongate, pale yellow white, smooth and shining; head and thorax margined, with the former long and produced; abdomen with black trapezoidal lateral spots; legs very long, with superior margin black.

Lipeurus versicolor. Nitzsch. Germ. Mag. iii. p. 292. Steph. Syst. Cat. pt. ii. p. 333. Burmeister Handbuch ii. pt. ii. p. 434. spec. 10.—Pediculus ciconiæ. Linn. Syst. Nat. ii. 1619. 25. Faun. Succ. 1925. Fabr. Spec. Insect. ii. Syst. Ent. 808. 24. Frisch Inst. Aust. i. viii. pl. 6. Stew. Elem. Nat. Hist. ii. 299. 25.

Head oblong, sub-pyriform, very narrow in front; clypeus

rotundate, lateral margin with a black band extending to the occiput; vertex with an horse-shoe shaped depression; eyes flat; antennæ long, the first joint large, cylindrical, second only the half the size, sub-conical, third acutely hooked, last two small, nearly equal; prothorax sub-conical, narrower than the head; metathorax quadrangular, both with a broad concave black lateral margin; abdomen nearly filiform, the first seven segments with a pitchy-black trapezoidal lateral spot on each side, last two entirely pitchy, rather paler; legs very long, with the superior margin of the coxæ, femora, and tibiæ black, base of the latter with a black annulus; anterior femora enlarged. Length 2.

The only specimens I have seen of this species, I took from a White Stork (Ciconia alba), in 1829. Dr. Burmeister says, "*segmentis abdominalibus fascia lata-nigra primis 3 interruptis.*" In my specimens this character formed the exception. I believe only one had the lateral spots united so as to form fasciæ, the general character was as represented, with a dorsal pale line,—the whole interrupted.

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8. Lipeurus baculus, (Louse of the Pigeon.)

Plate XIV. Fig. 3.

Elongate; abdomen nearly cylindrical, dull yellow-white, with a series of large trapezoidal fuscous patches on each side; head and thorax bright chestnut.

Lipeurus Baculus. Nitzsch. Germ. Mag. iii. p. 293. Burmeister Handbuch ii. pt. ii. p. 434. 8. Steph. Cat. pt. ii. p. 332. Lyonet Mem. du Muse. 18. p. 273. pl. 13. fig. 10.—Nirmus filiformis. Olfers. 90.—Pediculus Columbæ. Linn. Inst. Nat. 36. p. 2920. Fabr. Syst. Ent. n. 31. p. 809. Spe. Inst. t. ii. n. 36. p. 482. Mant. Inst. t. ii. n. 44. p. 371. Ent. Syst. t. vi. n. 44. p. 424. Geoff. Inst. ii. n. 7. p. 599. Schrank. Inst. Aust. n. 1031. Schrank Beytr. p. 114. n. 4. tab. 5. fig. 3. Stewt. Elem. ii. p. 300. spe. 36. Turton Gen. Syst. Nat. iii. 699. Donovan. Brit. Inst. ix. 7. pl. 297.—Pulex columbæ majoris. Redi. Expe. pl. 2. fig. Sup.—The Louse of the Pigeon. Albin. Aran. pl. 43. fig. infra.

Head chestnut, very long, and much depressed, with a dark line extending down each side from the clypeus to the temporal fossa, where it curves inwards; the occiput with two dark impressed lines, margin of the clypeus ciliated with strong setæ; eyes prominent; antennæ pale, ferruginous, the male with the first and second joints long and cylindrical, the third acutely hooked, the fourth and fifth short and minute, the female with the second joint much the longest, the remainder short and equal; prothorax small, rotundate, with two short lines in front; metathorax oblong, quadrangular depressed, with a long pitchy spot on each side, and a slight furrow down the centre; abdomen dull white, oblong, somewhat claviform towards the apex, with a row of trapezoidal fuscous spots down each side, divided longitudinally by a pale fulvous line, lateral margin black, last segment ferruginous, deeply emarginate; legs long, slender; anterior femora very large and lobate, pale fulvous. Length ♂ 1 ♀ $1\frac{1}{4}$.

I find this species very common on all varieties of Pigeons, and living in society with *Nirmus claviformis* and *Goniocotes compar*. Few birds indeed are so infested with parasites as the *Columbidæ*, besides four species of lice I have found a large Ixodes, a small Acarus, and the *Pulex Columbæ*, and the Rev. L. Jenyns has detected a Bug, *Cimex Columbarius*, described by him in the Annals of Natural History, vol. v. page 242, which has also occurred in Dovecotes, near Leeds.

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9. Lipeurus pelagicus.—*Denny*. (Louse of the Stormy Petrel.)

Plate XIV. Fig. 2.

Elongate, depressed, bright chestnut; head, thorax, and abdomen with a dark pitchy margin.

Head very long, somewhat triangular, with two depressed lines at the base; clypeus slightly depressed, lateral margin pitchy, and subangular, interrupted opposite the antennæ; eyes small but prominent; antennæ pale ferruginous, long, and filiform; prothorax transverse and small; metathorax the width of the head, oblong quadrate, channelled in the centre; abdomen elongate, nearly filiform, bright chestnut, darkest down the centre; stigmatic fovea very distinct, lateral margin together with that of the thorax pitchy; legs long, thick and pale chestnut. Length 2.

I have seen only two specimens of this species, the one from which the figure was taken I found beneath the wing of a Stormy Petrel (Thalassidroma pelagica), the second specimen was sent from Carlisle by Mr. Heysham, who took it from a specimen of Leach's Petrel (Thalassidroma Leachii), both of which are females.

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10. Lipeurus leucopygus. (Louse of the Heron.)

Plate XIV. Fig. 4.

Greyish-white, depressed, and shining, lateral margin black, last two segments of the abdomen spotless.

Lipeurus leucopygus. Burmeister Handbuch ii. pt. ii. p. 434. spe. 9.—Lipeurus obtusus. Steph. Cat. pt. ii. 332.—Pediculus Ardeæ cinereæ. Linn. Syst. Nat. ii. n. 23. p. 1019. edit. xiii. n. 23. t. 2919. Fabr. Syst. Ent. vi. n. 30. p. 422. Stewart's Elements Nat. Hist. ii. 299. n. 23.—Pediculus ardealis. Frisch. Insect. 5. tab. 4. Scop. Ent. Carnio. 384. n. 1046.—Pulex Ardeæ. Redi. Experi. pl. vi.—The Louse of the Heron. Albin, Spi. pl. 45. fig. inf. Shaw's Gen. Zool. vi. 112. fig. mid.

Head oblong triangular, dull yellow-white, with a long black streak before, and a short diagonal band behind the antennæ on each side, vertex concave, occiput with two depressed lines; eyes pale yellow; antennæ about half the length of the head, filiform in the female, the third joint in

the male, obtusely recurved; prothorax sub-conical, narrower than the head, with the lateral margins black; metathorax quadrate, lateral margins concave and black, bifurcate at the shoulder; abdomen elongate, acuminate, the first and second segment with a simple black lateral margin, the three following with a black sigmoidal, the sixth and seventh with a simple lateral fascia, attenuated towards the extremity, the last two quite plain; legs pale yellow-white, long, and rather slender, anterior femora large, those of the second pair with a black spot near the apex; tarsi chestnut. Length 1.

The first example of this species I had the opportunity of examining, I received from Mr. Thompson of Belfast, (whose exertions to illustrate this monograph deserves my best thanks) which was a female, since then another single specimen of the male occurred upon a Heron (Ardea cinerea), I was searching, and from these two being the only individuals within my knowledge, I suspect it is rather scarce. I have quoted Scopoli's Synonym, although he gives it as parasitical on the Stork, upon which bird it may probably be also found, as his description cannot apply to the usual parasite of Ciconia Alba, the L. *versicolor*, page 171, plate 15, fig. 7, he says, "*abdomen albidum ovatum*," but takes no notice of the black margin, from which I should infer that his description was taken from an immature specimen, in which the margin would not be so visible, or perhaps wholly absent, which frequently occurs in young specimens.

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11. Lipeurus temporalis. (Louse of the Merganser.)

Plate XIV. Fig. 7.

Pale ochraceous; head and prothorax bright ferruginous; abdomen elongate, clavate, lateral margin liver-brown; sutural rings pale.

Lipeurus temporalis. Nitzsch. Germ. Mag. iii. 292. Steph. Syst. Cat. pt. ii. p. 332.—Pediculus Mergi. Fabr. Spe. Inst. ii. 480, 23. Stew. Elem. Nat. Hist. ii. 299.—Ricinis Mergi Serrati. De Geer, Inst. vii. p. 78. 5. tab. iv. fig. 13.

Pale ochraceous, smooth, shining, and depressed; head obtusely triangular, bright ferruginous; clypeus transverse, with two oblique chestnut lines, uniting with a semicircular band across the vertex; occiput rotundate, with two short chestnut lines; eyes small; antennæ pale tawny, and rather thick; prothorax transverse, narrower than the head, rotundate; metathorax pale tawny, with a broad deep liver-brown indented fascia on each side, base truncate, with a row of stiff hairs; abdomen pale ochraceous, the first seven segments with a quadrangular deep liver-coloured patch on each side, sutural rings pale, last two segments dull chestnut; legs long, pale, and tawny, with a large brown spot in the centre of each femur. Length $1\frac{1}{2}$.

Communicated by Mr. Thompson from the Red-breasted Merganser (Mergus serrator), and by Rev. L. Jenyns, and Mr. G. R. Denny, from the Goosander (Mergus Merganser). I have not had the good fortune to see a male.

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12. Lipeurus squalidus. (Louse of the Duck.)

Plate XIV. Fig. 5.

Head, thorax, and legs pale ochraceous-yellow; abdomen dull white, the margin with a row of pitchy-black quadrangular patches; stigmatic orifices pale.

Lipeurus squalidus. Nitzsch. Germ. Mag. iii. p. 292. Steph. Cat. pt. ii. 332.—Pediculus Anatis. Fabr. Syst. Ant. 345. Stew. Elem. ii. 300.

Filiform, shining and depressed; head pale ochraceous, obtusely triangular, with two short depressed lines at the base, and a semicircular one across the centre, the lateral margins with an interrupted black band; eyes prominent;

antennæ pale yellow, the male with the first joint large, cylindrical, second similar, but smaller, third short and abruptly hooked, last two small and equal; prothorax transverse not so wide as the head; metathorax quadrate, with a pitchy-black cuneiform band on each side, base, truncate; abdomen elongate, clavate, pale dirty white, the lateral margin of the first seven segments with a broad pitchy-black, and interrupted quadrangular band, paler internally; stigmatic orifices pale in the centre, terminal segment tawny-yellow; legs long and thick, and finely pubescent. Length ♂ ½ ♀ 1¾.

Communicated by Mr. Selby from the Mallard (Anas Boschus), by Mr. Thompson and Mr. Heysham from the Scaup Duck (Fuligula Marila), and the Scoter (Oidemia nigra), and I have taken it myself from the Pochard (Fuligula ferina).

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13. Lipeurus jejunus. (Louse of the Goose.)

Plate XV. Fig. 4.

Filiform, pale yellow-white, witha pitchy margin, the first eight segments with quadrangular bands; legs dusky above.

Lipeurus jejunus. Nitzsch. Germ Mag. iii. p. 292. Steph. Syst. Cat. pt. ii. p. 332. Children's Appen. Back's Land Expe. p. 538.—Pediculus Anatis Anseris. Linn. Syst. Nat. ii. 1018. 18. Faun. Succ. 1952. Fabr. Syst. Ent. 807. 19. Syst. Inst. ii. 480. 22. Schr. Inst. Aust. 503. Stew. Elem. Nat. Hist. 299. Turton iii. 699.—Nirmus crassicornis. Olfers. 88.—Pulex Anseris Sylvestris. Redi. Expe. pl. x. fig. dext.—The Louse of the Wild Goose. Albin. Aran. 76. tab. 58.

Head oblong and depressed, pale tawny-yellow, with an interrupted pitchy margin; eyes small; antennæ similar to the preceding, pale yellow-white, apex dusky; prothorax transverse, with a pitchy margin; metathorax oblong quadrate, slightly sinuated at the sides, with a pitchy cuneiform

lateral margin, base truncate; abdomen nearly filiform, the lateral margin of the first eight segments with a broad quadrangular black band; stigmatic orifices pale; legs very pale, long, and thick, the upper margin dark brown; tarsi fulvous. Length ♂ 1 ♀ 1½.

I have considerable doubts whether this and the preceding species are specifically distinct, although they are considered so by most authors. I have received it from the Rev. L. Jenyns, taken on the White-fronted Goose (Anser albifrons), Mr. Thompson on the Brent (Bernicla torquata), Mr. Selby on the Wild Goose (Anser ferus), and Mr Heysham on the Bean Goose (Anser Segetum).

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14 Lipeurus stellaris.—*Denny*. (Louse of the Bittern.)

Plate XV. Fig. 3.

Pale yellow; abdomen acutely ovate, the fourth, fifth, sixth, and seventh segments with a dusky band, and two black spots.

Head elongate, sub-triangular, pale fulvous-yellow, with an impressed line from the clypeus to the vertex, ending in a foveolæ, and two oblique lines from the antennæ to the occiput, a narrow fuscous band passing down the lateral margin; eyes small and pale; antennæ long and slender, in the male the first and second joints long and cylindrical, third very short, abruptly hooked, last two slender and equal; prothorax transverse, channelled, lateral margin dusky, base rotundate; metathorax as wide as the head, quadrate, with a dusky band on each side, base truncate; abdomen elongate, and acutely ovate, pale ashy-white, with a yellow shade, the fourth, fifth, sixth, and seventh segments with a dusky band at the sutural margin, and two black spots on each; legs pale, yellow-white; anterior femora enlarged, superior margin involute. Length 1 to 1¼.

I have seen no other specimens than those in my own collection, which I found on the Bittern (Botaurus stellaris).

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15. Lipeurus ebræus. (Louse of the Crane.)

Plate XIII. Fig. 5.

White, front of the head with four black spots; abdomen oblong ovate, each segment, excepting the first and last two, with a mark resembling the Hebrew letter ב Daleth.

Lipeurus ebræus. Nitzsch. Germ. Mag. iii. p. 293. Steph. Cat. pt. ii. p. 332. Burmeister Handbuch, ii. pt. ii. p. 435.—Pediculus Gruis. Linn. Syst. Nat. ii. 1019. 24. Faun. Suec. 1954. Fabr. Syst. Ent. 809. 23. Syst. Inst. ii. 481. 27. Frisch. Inst. 5. 15. tab. 4. Stew. Elem. 299. 24.—Pulex Gruis. Redi. Expe. pl. iii. Oper. tab. 19.—The Louse of the Crane. Albin. Spi. pl. 44. fig. sup.

Head obtusely triangular, deeply sinuated before the eyes, a black spot on each side of the clypeus, and two upon the vertex, two impressed lines from the antennæ to the occiput, base rotundate, with two angular brown spots; eyes pale yellow and prominent; antennæ in the male with the first joint very large and cylindrical, slightly curved, second and third very short, with a black spot on the outer edge, the latter recurved and acute, fourth and fifth very minute, in the female the first joint short, the second long and subclavate, third shorter and thick, last two much smaller; prothorax transverse, narrower before than behind, slightly channelled, with two dark lines, base rotundate; metathorax subquadrate, sinuated at the shoulders with two oblique depressed lines, base truncate, with an angular black spot on each side; abdomen large, subclavate, apex ovate, with a narrow black margin, each segment, excepting the first and two last, with black figures on each side resembling the Hebrew letter ב (Daleth); legs pale, yellow-white, anterior pair short, with the femora

enlarged, having a black patch on the inferior margin, and another on the external margin of the tibiæ, second and third pair long, with the femora involute; tarsi chestnut. Length ♂ 1¾ ♀ 2.

I am indebted to the liberality of Professor Burmeister of Halle, for the opportunity of being able to figure this fine species, who with his accustomed zeal for furthering scientific investigations, forwarded me specimens obtained from the Crane (Grus cinerea) in Germany.

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16. Lipeurus staphylinoides.—*Denny.* (Louse of the Gannet.)

Plate XV. Fig. 2.

Pitchy black, smooth and shining; head large, obtusely triangular; antennæ pale yellow, third joint tuberculous and fuscous.

Head large, obtusely triangular; clypeus broad, ochraceous, emarginate, with two depressions on the vertex, base very convex and rotundate; eyes pale brown, and prominent; antennæ short, and sub-conical in the female, in the male the first joint thick, sub-cylindrical, second long, gradually tapering, third tuberculous on the inner edge at the apex, fuscous brown, fourth and fifth very minute; prothorax transverse, deeply channelled; metathorax subquadrate, truncate behind, with a small fasciculus of hairs from the angles of the lateral margin; abdomen elongate, ovate, somewhat depressed, very highly polished; legs chestnut, darker on the superior surface, anterior pair short and thick; femora subangular, the second and third pair long and slender. Length 1—1¼.

A common parasite on the Gannet (Sula Bassana). It has much the appearance of one of the smaller Staphy-

linidæ at first view, more especially after death, when the extremity of the abdomen frequently curves upward, as is the case in Oxytelus, Stenus, &c. The female is much scarcer than the male, I have seen only one of the former sex, though numbers of the latter.

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17. LIPEURUS BREVICORNIS.—*Denny.* (Louse of the Shag.)

Plate XIII. Fig. 8.

Chestnut, smooth, and shining; head obtusely triangular; antennæ in the male short and thick; abdomen ovate, the sutures pale.

Head obtusely triangular; clypeus concave, slightly produced, a black spot on each side before the eyes, base transverse and convex; eyes small and flat; antennæ pale, fulvous, and setaceous, in the male short and thick, the first joint large, somewhat curved, second short and cylindrical, third conical, obtuse, and slightly recurved, fourth and fifth very minute, the female with first two the largest; prothorax transverse channelled; metathorax subquadrate, with a small fasciculus of hairs from each lateral angle at the base; abdomen oblong ovate, the first segment short and rotundate, in the female, rather longer, and somewhat angular in the male, light chestnut down the centre, lateral margins dark; stigmatic foveolæ deep; sutures pale; legs fulvous; anterior femora subangular. Length $\frac{1}{3}$.

I have received this species from the crested Shag (Phalacrocorax cristatus), taken at Twizell by Mr. Selby, and Belfast by Mr. Thompson. The latter gentleman also found one specimen upon the Oystercatcher (Hæmatopus Ostralegus).

18. Lipeurus luridus. (Louse of the Water-Hen and Coot.)

Plate X. Fig. 12.

Elongate, pale brown; clypeus very much produced; abdomen with a black margin, and lateral quadrangular fuscous fasciæ to each segment.

Lipeurus luridus. Nitzsch. Germ. Mag. iii. p. 292. Steph. Cat. pt. ii. p. 332.—Pulex Fulicæ. Redi. Expe. pl. iv. f. ii.—The Louse of the Moor Hen. Albin. Aran. pl. 45. fig. dext. Shaw's Gen. Zool. vi. pl. 120.

Head elongate, pale fulvous brown, with a black lateral margin, and transverse sub-angular band in front; clypeus produced, and pale fulvous yellow; eyes small and pale; antennæ yellow, rather thick, joints nearly equal in the female; prothorax narrower than the head, transverse, lateral margin black; metathorax quadrate, dusky on the sides; abdomen nearly cylindrical, lateral margin black, first seven segments with a quadrangular fuscous patch on each side; legs pale yellow; femora with a dusky patch. Length 1.

I have found this species upon the Coot (Fulica atra) and Water Gallinule (Gallinula chloropus), and venture to place it as the L. luridus of Authors, solely from the circumstance of its being found upon the same birds as that species: my specimens are females, therefore I have no means of ascertaining in what the male differs from that sex.

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19. Lipeurus bilineatus. (Louse of the Fulmar.)

Lipeurus bilineatus. Steph. Syst. Cat. pt. ii. 333. — Pediculus vagelli. Fabr. Ant. 346. Stew. Elem. Nat. Hist. ii. 299.

I insert this species on the authority of Mr. Stephens's Systematic Catalogue of British Insects, in which it is enumerated. I have never seen a specimen, or a description of it, therefore can give no information as to its specific cha-

racter. Had it been in my power, I should have been glad to have visited London for the purpose of examining this and one or two other specimens.

Sub-Genus VI. ORNITHOBIUS. *(Denny.)*

Ornithobius, Denny's MSS. Nirmus, Burmeister.

SUB-GENERIC CHARACTER.

Head large, cordate, emarginate ; clypeus obtuse, with two horny acute mandibuliform processes (plate 22, fig. 1—*c.*) ; *trabeculæ* none ; *eyes* prominent, near to the anterior margin of the head ; *antennæ* situated about two-thirds from the base, with the first three joints the largest, in the male much the longest, with the first and second joints cylindrical, third acutely produced on the internal side, fourth and fifth small ; *prothorax* small, flat ; *metathorax* large and rotundate ; *abdomen* elongate and depressed.

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1. Ornithobius cygni. (Louse of the Swan.)

Plate XXIII. Fig. 1.

White, smooth, and shining, the first six segments of the abdomen with a black spot at the base of the lateral margin, last segment wholly black ; ungues chestnut.

Pediculus cygni. Linn. Syst. Nat. ii. 1018. 17. Fabr. Syst. Ent. 807. 18. Syst. Inst. ii. 480. 21. Stewt. ii. p. 299.—Pulex cygni. Redi. Expe. tab. 8. Redi. Oper. tab. 20.—The Louse of the Swan. Albin. Aran. 76. tab. 48.

Head with two short fovea in front, and two depressed lines from the eyes to the occiput, and three or four punctures on the lateral margin towards the base ; antennæ very short in the female ; prothorax much narrower than the head, quadrate ; metathorax transverse, the width of the head, anterior part very rotund, base produced and sub-

angular, lateral margin in the male nearly straight; abdomen with the segments nearly equal, lateral margin impressed, the first six with a black spot at the base of the sutural angle, last segment minute and black; legs thick and strong; anterior femora sub-angular; ungues chestnut. Length 2.

I have found this species upon both the wild and tame Swans (Cygnus ferus and Olor), and Mr. Thompson took it from the Cygnus Bewickii in the neighbourhood of Belfast. I have ventured to constitute this and the following species a sub-genus, from a conviction that they possessed characters of equal importance with some of the other sub-genera. Dr. Burmeister retains them in the sub-genus *Nirmus*, but the bicornuted clypeus, the structure of the antennæ, the proximity of the same, as well as the eyes, to the anterior part of the head, the peculiar form of the latter, and also the thorax, are all characters so striking, and deviating from those of the rest of the *Nirmi*, that I trust I shall not be accused of unnecessarily subdividing the group. Ornithobius can be distinguished at one glance, whereas, although *Docophorus* and *Nirmus* are principally distinguished by the presence or absence of *trabeculæ*, which at the extreme of the series are admirable diagnostic signs, still I think we may find some which belong to the debatable ground between the two sub-genera, and that some Nirmi have very minute trabeculæ, while the majority have none; when the former occur, it is extremely difficult to decide to which sub-genus they belong.

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2. Ornithobius gonioplurus.—*Denny.* (Louse of the Canada Swan.)

Plate XXIII. Fig. 2.

Pale yellow-white; head with six black spots; metathorax acuminate behind; abdomen elongate, the first

seven segments with a pitchy black three-sided character on each lateral margin.

Head sub-cordate, with two pitchy spots anteriorly, and two triangular ones at the base, and a broad fascia behind each eye, from which proceed a faint depressed line to the occiput; eyes prominent and yellow; antennæ long, rather thick, the first three joints in the male very large; prothorax small, quadrate, with a black spot on each side; metathorax as wide as the head, lateral margin very rotund and black, base acuminate, with several long stiff hairs; abdomen oblong, the first seven segments marked on the lateral margin with a pitchy-black three-sided character, somewhat resembling the Hebrew letter ב but variable; legs thick, pale yellow-white, superior margin pitchy; anterior femora sub-triangular, with a dark spot at the apex; tibiæ dusky; tarsi chestnut. Length 2.

Of this species I have seen but three specimens, two of which were found on the Canada Swan (Cygnus Canadensis), in Norwich, and communicated by my brother, and one on the Goosander (Mergus Merganser), by Mr. Heysham at Carlisle. It approaches very nearly to the *Nirmus stenopyx* of Dr. Burmeister, but as the colour of that species is not recorded, I could not decide upon their identity with that degree of certainty I could have wished I therefore thought it better to give it a specific appellation than a wrong synonym.

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3. Ornithobius atro-marginatus.—*Denny.* (Louse of the Canada Swan.)

Plate XXIII. Fig. 3.

Pearly-white and shining; head obtusely panduriform; abdomen with a narrow black margin.

Head and thorax pale yellow-white, the former obtusely

panduriform; clypeus transverse, with two dusky spots, lateral margin sinuated, with a black spot before each eye, base concave, with two depressed lines extending to the vertex; eyes black; antennæ thick, the third joint in the male acutely produced; prothorax narrower than the head, rotundate before and behind, lateral margin straight, with a black spot; metathorax as wide as the head, sides rotund, with a depressed line from each shoulder, base subangular, with several stiff hairs; abdomen oblong ovate, each segment with a narrow black lateral margin; legs white; tarsi chestnut. Length 1¼.

This species was also communicated by my brother, who took it from the same species of Bird as the last.

Genus II. TRICHODECTES.—(*Nitzsch.*)

Burmeister. Stephens. *Pediculus.* Linn, Fabricius, Schrank. *Ricinus. De Geer.*

GENERIC CHARACTER.

Head depressed, scale-like, horizontal, wider than the prothorax, mouth beneath; lateral margin sinuate.

Mandibles strong; apex bidentate.

Labrum dilated at the base, inflated, changeable in appearance, margin free, slightly notched.

Labium small, less dilated, margin free, slightly notched.

Maxillary palpi none or inconspicuous.

Labial palpi very short and two jointed (h).

Antennæ filiform, three jointed, in the males of some species slightly clavate and somewhat cheliform, terminated by a fasciculus of hairs.

Eyes placed on the lateral margin of the head behind the antennæ, in many cases inconspicuous or absent.?

Thorax of two segments.

Abdomen, the last segment but one in the female furnished with moveable curved valves for the purposes of coition.

Tarsus two jointed, curved, formed for climbing; unguis single, which passing between the spines at the base of the tibia forms a claw.

Food hair, wool, and the exfoliated particles of the Epidermis.

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* Head very broad, body somewhat orbicular and short.

1. Trichodectes crassus. (Louse of the Badger.)

Plate XVII. Fig. 3.

Pale fulvous; head and thorax bright ferruginous-yellow, the former deeply emarginate, with four black fascia in front, and two from the eyes to the occiput; abdomen orbicular.

Trichodectes crassus. Nitzsch. Germ. Mag. iii. p. 295. Step. Cat. pt. ii. p. 330.—Pediculus Melis. Fabricius. Syst. Antl. p. 341.

Pale tawny-yellow; head and thorax bright ferruginous yellow, the former very large, transverse; clypeus deeply emarginate, with two black fasciæ in the centre, and one before the antennæ on each side; vertex concave, lateral margin very deeply sinuated, base obtusely trilobate, with two broad diagonal dark fascia from the occiput to the antennæ; eyes prominent and black; antennæ thick, with first joint large and conical, the second and third cylindrical, slightly clavate; prothorax transversely panduriform, with the lateral margins fuscous; metathorax of equal width, very short, deeply notched behind and ciliated; abdomen large, orbicular and flat, with a depressed line down each side, segments nearly equal, somewhat sinuated in the centre; legs long; tibiæ clavate, strongly toothed at the extremity internally; tarsi short; ungues slightly curved. Length ⅓.

This species, which is very numerous on the Badger (Meles Taxus), approaches very nearly to the following species, but may be readily distinguished by the greater width of its head, deeply notched clypeus, and more orbicular form of body.

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2. Trichodectes latus. (Louse of the Dog.)

Plate XVII. Fig. 1.

Pale fulvous; head and thorax ferruginous-yellow, the former sub-quadrate, with two black spots in front, and two diagonal fasciæ from the antennæ to the occiput; abdomen oval.

Trichodectes latus. Nitzsch. Germ. Mag. iii. p. 296. Step. Cat. pt. ii. p. 330. Burmeister Handbuch, ii. pt. ii. p. 436. 2.—Ricinus Canis. De Geer. Inst. vii. pl. iv. fig. 16.—Pediculus setosus. Olfers. 84.

Pale tawny; head sub-quadrate, vertex concave; clypeus broad and slightly rotundate, with two trapezoidal black spots in the centre, lateral margin deeply sinuated before the eyes, with a black spot at the anterior angle passing to the base of the antennæ, and uniting with the diagonal fasciæ on each side to the occiput, base rotundate; eyes prominent; antennæ pale yellow, in the male the first joint large and sub-cylindrical, second smaller, third somewhat clavate and recurved, in the female smaller, more slender, clavate, the last joint elongate ovate; prothorax large and transverse; metathorax short, deeply emarginate and ciliated; abdomen large, oval, and depressed; legs long, pale fulvous; tibiæ clavate, toothed internally at the apex; ungues arched and acute. Length $\frac{1}{2}$ to $\frac{3}{4}$.

Common upon dogs more especially puppies. The male when walking, generally curves back its antennæ, which being slightly bent at the extremity have a somewhat Taurine aspect.

3. Trichodectes subrostratus. (Louse of the Domestic Cat.)

Clypeus elongate, triangular; apex bituberculate.

Trichodectes subrostratus. Nitzsch. Germ. Mag. iii. 296. Steph. Cat. pt. ii. p. 330. Burmeister Handbuch ii. pt. ii. p. 436. spe. 4.—Pediculus Canis. O. Fabr. p. 215. ?

That this species is a native of Britain there can be little doubt, but as I have sought it in vain, I am compelled to substitute in place of a general description, Dr. Burmeister's specific character.

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4. Trichodectes vulpis.—*Denny*. (Louse of the Fox.)

Plate XVII. Fig. 5.

Head and thorax bright fulvous-yellow, the former sub-orbicular, with four angular black spots on the anterior margin, and two short fasciæ at the base.

Head sub-orbicular; clypeus slightly produced and emarginate, with two angular black spots, surrounded with chestnut in front, and one in a broad chestnut band before the eyes, lateral margin deeply sinuate, base truncate, with two short black fasciæ at the occiput; antennæ clavate, the first joint large, second the longest, obconical, third short; prothorax short and transverse, posterior margin sinuate and ciliated; metathorax transverse, rather wider than the head, with two oblique impressed lines at the lateral angles; abdomen broad and ovate, pale yellow, segments nearly equal, sinuated posteriorly with a broad fulvous dorsal band, sutures pale and ciliated; legs short; femora thick, especially the anterior pair; tibiæ very abruptly clavate and toothed; tarsi small; ungues slender. Length ½.

For the only specimens of this Insect I have ever seen, I am indebted to the kindness of Dr. Southby, of Amesbury, Wiltshire, who found them on the head of a Fox (Canis Vulpes).

5. Trichodectes dubius. (Louse of the Weasel and Stoat.)

Plate XVII. Fig. 2.

Head and thorax fulvous-yellow; clypeus acutely produced on each side; abdomen pale yellow-white, nearly quadrate.

Trichodectes dubius. Nitzsch. Germ. Mag. iii. p. 296.—Pediculus Mustelæ. Schrank. Faun. Boica.

Head small, sub-rotundate; clypeus produced, emarginate, with two dark fasciæ in the centre, acutely angular before the antennæ, lateral margin sinuated, with a dark diagonal band extending from the anterior to the occiput, base rotundate; antennæ short and thick, the first joint short and conical, second long, obconical, third short; prothorax as wide as the head, transverse; metathorax short, much wider than the head, base sinuated and sub-angular; abdomen nearly quadrate, with an impressed line down each side; legs thick, pale yellow; tibiæ very abruptly clavate, the posterior nearly angular, and armed with several strong spines. Length $\frac{1}{3}$.

Nitzsch in his article in Germar's Magazine, "Die familien und Gattungen der Thierinsekten," enumerates a species of Trichodectes under the specific name of *dubius* between *parenthesis*, as infesting the Weasel (Mustela vulgaris); whether he had doubts as to its specific identity, from the *T. retusus* infesting the Common Martin (Mustela Foina), I know not, never having seen the latter. I have therefore retained the above name, having no alternative, but either to do this or give it a fresh one. To make it identical with the *retusus*, I could not for the reason before stated. Sir Wm. Jardine forwarded me specimens from the Weasel, and P. J. Selby, Esq. from the Stoat (Mustela Erminea), from both of which animals I have also taken it myself.

* * Head sub-rotundate; abdomen oblong.

6. Trichodectes scalaris. (Louse of the Ox.)

Plate XVII. Fig. 9.

Head and thorax bright ferruginous, the former obcordate; antennæ with the third joint the longest and fusiform.

Trichodectes scalaris. Nitzsch. Germ. Mag. iii. p. 296. Steph. Cat. pt. ii. p. 330. Burmeister Handbuch ii. pt. ii. p. 436.—Pediculus Bovis. Linn. Syst. Nat. ii. 1017. 9. Faun. Suec. 1946. Fabr. Spe. Insect. ii. 477. 7. Syst. Ent. 805. 6. Berk. Syn. i. p. 170. Turton. iii. 696. Stewt. Elem. ii. p. 298.

Head obcordate, bright ferruginous, with two fuscous spots in front; clypeus convex, lateral margin with a fuscous spot before the eye, and a somewhat angular fascia from the anterior margin to the occiput; eyes prominent; antennæ pale, tawny, seated in the lateral sinus, slender, the third joint the longest, fusiform and obtuse; prothorax about the width of the head, transverse; metathorax small, produced, truncate behind, and ciliated with a semicircular depression in the centre; abdomen pale tawny, finely pubescent and oblong, the first six segments with a transverse, ferruginous, or fuscous band on the upper half, and a large spot at the apex of the same, and a narrow lateral fascia on each, excepting the first and last two; legs pale tawny; tibiæ acutely toothed; tarsi short; ungues nearly straight. Length $\frac{1}{2}$.

Common on Cattle, frequenting the mane. I have also occasionally found it upon the Ass (Equus Asinus).

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7. Trichodectes equi. (Louse of the Horse.)

Plate XVII. Fig. 7.

Head and thorax bright chestnut, the former large, transversely quadrate; antennæ with the third joint the longest and clavate.

Trichodectes Equi. Steph. Cat. pt. ii. p. 330.—Pediculus Equi. Linn. Syst. Nat. ii. 1018. Faun. Suec. 1948. Fabr. Spe. Insec. ii. 478. 9. Syst. Ent. 806. 8. Stew. ii. 298. Turton. iii. 696.

Head large, sub-quadrate; clypeus transverse, truncate, base rotundate, with two dark fasciæ from the occiput, united at acute angles with impressed lines to the lateral margin; eyes prominent; antennæ thick, pale tawny, the third joint the longest and clavate; prothorax transverse, narrower than the head; metathorax wider than the head, base rotundate and ciliated, a semicircular impressed line in the centre; abdomen obconical, pale tawny yellow, and finely pubescent, the first eight segments with a fuscous transverse band on the upper half, last two segments chestnut, lateral margin with a narrow fuscous band; legs pale chestnut, thick, and strong; tibiæ very abruptly clavate; tarsi short. Length 1.

Common on the Horse and Ass, especially when fresh from pasture.

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8. Trichodectes longicornus. (Louse of the Fallow Deer.)

Plate XVII. Fig. 8.

Elongate; head and thorax bright fulvous; clypeus deeply emarginate; antennæ with the second joint the longest, third acute.

Trichodectes longicornis. Nitzsch. Germ. Mag. iii. p. 296. Step. Cat. pt. ii. p. 330. Burmeister Handbuch, ii. pt. ii. 436.—Pediculus cervi. Redi. Expe. pl. xxiii. fig. inf.—The Louse of the Stag. Albin. Spiders. pl. 53. fig. inf.

Head subquadrate; clypeus rotundate, deeply emarginate, angles of the sinus acute and fuscous, ciliate, lateral margin sinuated before the eyes, with a fuscous cuneiform spot on each side connected with two longitudinal fasciæ at the occiput; vertex concave, with a pale brown spot; eyes prominent; antennæ long, rather slender, with the second

joint the longest, the third conical and acute; prothorax much narrower than the head, sub-quadrate; metathorax transverse, sinuated posteriorly, and ciliated with a dark semicircular line in the centre ; abdomen oblong, pale yellow, the first eight segments with a transverse fuscous band on the lower margin, last segment chestnut; legs pale ochraceous yellow, long, rather slender ; tarsi elongate; ungues long, nearly straight. Length 1.

Not uncommon upon the Fallow Deer (Cervus dama), upon which animal I have found it in greatest plenty on the inner side of the thigh. I am also indebted for specimens of this species to George Walker, Esq. of Killingbeck Lodge.

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9. Trichodectes sphærocephalus. (Louse of the Sheep)

Plate XVII. Fig. 4.

Head nearly orbicular; clypeus rugulose, and ciliated with stiff hairs, the third joint of the antennæ the longest and clavate.

Trichodectes sphærocephalus. Nitzsch. Germ. Mag. iii. p. 296. Steph. Cat. pt. ii. p. 330. Burmeister Handbuch. ii. pt. ii. p. 436.—Pediculus Ovis. Linn. Syst. Nat. ii. 1017. 8. Faun. Suec. 476. 1945. Schrank. Ins. Aust. 502. tab. i. fig. 8. 9. Redi, Expe. pl. xxii. fig. Sinist. Turton. iii. 696.

Head and thorax ferruginous, the former nearly orbicular; clypeus convex and rugulose, with an oblong fuscous spot on each side, terminating in two lines extending to the occiput; eyes very small ; antennæ pale fulvous, the third joint the longest and clavate ; prothorax sub-conical, truncate before and behind, nearly as wide as the head ; metathorax transverse, the width of the head, base rotundate, with a semicircular impression in the centre ; abdomen oblong, obtuse, pale yellow, the first seven segments with a narrow transverse pitchy band at the sutural margin ; legs

fulvous, rather thick; tibiæ abruptly clavate and toothed; tarsi long; ungues nearly straight.

The only specimen of this species which I have seen, was forwarded by the Rev. L. Jenyns, who took it from a sheep. It approaches very nearly to the succeeding species, but may be immediately known by the rugulose clypeus and clavate antennæ, &c.

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10. Trichodectes similis.—*Denny*. (Louse of the Red Deer.)

Plate XVII. Fig. 6.

Head and thorax bright chestnut and finely pubescent, the former rotundate; antennæ with the third joint the longest and cylindrical; legs slender.

Head rotundate; clypeus convex, slightly produced and entire, two diagonal lines passing from the anterior part to the occiput; eyes prominent; antennæ long and slender, the third joint longer than the preceding, and nearly cylindrical; prothorax narrower than the head, sub-conical; metathorax wider than the head, transverse, posterior margin concave and ciliated, with a sub-angular depression across the centre; abdomen oblong, pale tawny-yellow, shining, and pubescent, the first seven segments with a narrow transverse pitchy band at the sutural margin; legs long and slender, pale fulvous; tarsi short; ungues long and nearly straight. Length $\frac{3}{4}$.

The specimens from which the figure was taken were communicated by George Walker, Esq. of Killingbeck Lodge, who obtained them from Red Deer at Bolton Abbey, the seat of His Grace the Duke of Devonshire.

Professor Nitzsch enumerates the following species which I have never seen, *Trichodectes retusus, from the Martin*, *Trichodectes exilis, from the Otter*.

FAMILY III.

LIOTHEIDÆ.

"The Author of eternal salvation is also the Lord of nature. He who has destined us for future joys has at present placed us in this world, whoever therefore shall regard with *contempt* the economy of the Creator here, is as truly impious as the man who takes no thought of futurity, and in order to lead us towards our duty, the Deity has so closely connected the study of his works with our general convenience and happiness, that the more we examine them the more we discover for our use and gratification."

LINNÆUS.

"The noblest employment of the mind of man is the study of the works of his *Creator*.

"Thou who seest the whole as admirable in parts, canst thou better employ thine eye than in tracing out thy *Creator's* greatness in them; thy mind than in examining their wonders?

"Piety to thy God, and benevolence to thy fellow-creatures, are they not thy great duties? What shall teach thee the one or what shall inform thee of the other, like unto the study of His works?"

ECONOMY OF HUMAN LIFE.

" Nothing of all these various existences was formed in vain; and that which is, however it may appear to our confined and imperfect comprehensions, is formed with supreme wisdom. It does not become us to pry too boldly into the designs of God. We whose lives are but those of a day, are unable to judge of the councils of that Providence, whose economy regards not the objects merely of our senses, but the whole system of Nature. We cannot scrutinize the performances of God, nor can we possibly, with all our boasted wisdom and cunning, discover the grand connexions between incidents that lie widely separate in time, and which are only known to power infinitely surpassing ours. The Creator did not plan the order of Nature according to our confined principles of economy. The stupendous performance of the Deity is one throughout the Universe; and if Providence does not always calculate exactly according to our mode of reckoning, it would but become our inferior stations and judgment, instead of industriously seeking out imperfections, to discover that these lie alone in our own erroneous powers of discrimination. It would be well, if, instead of looking to self-interest only, in the works of the Creation, we could, according to the remark of a late writer, consider these things in the same light as when different seamen are waiting at one port for fair winds, each to the country to which he is bound; where we plainly see it impossible that all should be satisfied."—BINGLEY.

FAMILY III.

LIOTHEIDÆ. (Burmeister.)

Orthoptera Epizoica (*Nitzsch*).—Nirmidæ (*Leach.*)

ESSENTIAL CHARACTER.

Antennæ capitate, four jointed; maxillary palpi conspicuous; mouth with strong mandibles.

NATURAL CHARACTER.

Mouth beneath, very near to the anterior margin; mandibles strong, armed at the end with two teeth; antennæ inserted in a cavity of the lateral margin; thorax of two or three segments; prothorax with the lateral margins protruding more or less, nearly the width of the head; mesothorax generally small, in some cases as wide as the head; metathorax large, the width of the abdomen; abdomen with nine or ten segments; œsophagus symmetrical, equal, slightly unilateral; biliary vessels four, free, thickened in the middle; males with three testicles on each side; females with three ovaries on each side: Coitus exercetur femina mari submissa. Metamorphosis indistinct.

ARTIFICIAL DIVISIONS OF THE FAMILY.

		Genus.	Sub-Genus.
LIOTHEIDÆ.	I. Tarsi with two claws.	I. Liotheum.	I. Colpocephalum. II. Menopon. III. Nitzschia. IV. Trinoton. V. Eureum. VI. Laemobothrium. VII. Physostomum.
	II. Tarsi with one claw.	II. Gyropus.	

SYNOPSIS SPECIERUM.

LIOTHEIDÆ.

Genus I. LIOTHEUM.

SUB-GENUS I. COLPOCEPHALUM.

1. Flavescens. C. Fulvum; abdominis segmentorum fasciis castaneis transversis; capite maculam nigram orbitalem ostendente. Long. $\frac{3}{4}$. Hab. Aquila chrysaëtos et albicilla.

2. Fregili. C. Capite nitide castaneo-flavo cum maculis nigris orbitalibus; thorace intense castaneo; abdomine pallido-fulvo, margine laterali piceo; pedum paris secundi et tertii femore apicem versus dentato. Long. $\frac{1}{2}$. Hab. Fregilus graculus.

3. Turbinatum. C. Castaneum, nitidus; capite lato cum maculis orbitalibus duobus nigris ad basim extensis; metathorace lato; abdomine turbinato cum segmento primo maximo. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Columba domestica.

4. Zebra. C. Elongatum, fuscum; capite magno subpanduriformi cum fascia nigra incontinua utrinque; abdomine profunde emarginate, marginibus suturalibus pallidis. Long. 1. Hab. Ciconia alba.

5. Ochraceum. C. Elongatum fulvum nitidus pubescens; capite maculus duas nigras orbitales ostendente; abdomine seriem macularum fuscarum per marginem lateralem habente; femore posteriore magno involuto. Long. 1. Hab. Ordo Grallæ.

6. Piceum. C. Intense hepaticum pœne nigrum, valde læve, splendens; capite magno, puncturato; prothorace subquadrato. Long. 1. Hab. Sterna cantiaca.

7. Subæquale. C. Obscure, testaceo-flavum; metathorace maximo cum fascia nigra læta ad basim; fasciis

abdominis fuscis. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Corvus frugilegus, Corone, et corax.

8. Eurysternum. C. Obscure testaceo-flavum, nitidus; suturis abdominis pallidis, pedibus crassis, nubile castaneis, forma varia. Long. 1. Hab. Corvus pica.

9. Importunum. C. Piceo-nitidus, pubescens; capite obtuse pyramidato cum macula nigra orbitali utrinque; abdomine claviformi. Long. $\frac{3}{4}$. Hab. Ardea cinerea.

10. Nyctarde. C. Intense castaneum, nitidus, læve; capite magno, obtuse pyramidato cum maculis duabus nigris orbitalibus; abdomine brevi, obtuse ovato. Long. $\frac{1}{2}$—$\frac{2}{3}$. Hab. Ardea nycticorax.

11. Quadripustulatum. C. Fulvum, læve, nitidus; capite pallido cum maculis clyp. orbit. occipital, fuscis; mesothorace brevissimo; fasciis abdominis castaneis (in margine autem later, intense castan). Long. 1—$1\frac{1}{4}$. Hab. Ciconia alba.

12. Haliæeti. C. Nitido-fulvum, nitidus, læve; capite transverso cum maculis duabus piceis orbitalibus; mesothorace brevi, transverso; abdomine ovali cum fasciis castaneis. Long. $\frac{3}{4}$. Hab. Pandion haliæetus.

Sub-Genus II. MENOPON.

* Abdomine elongato.

1. Pallidum. M. Elongatum, pallidum straminei coloris, læve nitidus; capite utrinque subsinuato cum maculis piceis. Long. ♂ $\frac{1}{2}$ ♀ $\frac{3}{4}$. Hab. Gallus domesticus.

2. Fulvo-maculatum. M. Fulvo-flavum, pubescens; capite semilunari cum macula picea transversa utrinque; abdomine clavato cum maculis pallidis in margine laterali. Long. 1. Hab. Perdix coturnix.

3. Fusco-cinctum. M. Elongatum, olivaceum, nitidus, pubescens; capite utrinque piceo-maculato; puncturis tribus prothoracis linea conjunctis, mesothorace distincto annulis suturalibus pallidis. Long. 1. Hab. Lanius collurio.

4. Pici. M. Nitide fulvum nitidus, capite obtuso subtriangulari; prothorace obconico transverso, abdomine cinctu pallide castaneo notato. Long. $\frac{3}{4}$. Hab. Picus viridis.

5. Citrinellæ. M. Pallide fulvo-flavum nitidum et pubescens, capite semilunari cum maculis duobus nigris; prothorace antice et postice truncato. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Emberiza citrinella.

6. Troglodyti. M. Pallide flavo-album, splendens; mesothorace distincto; abdomine cinctu saturate castaneo notato; pedibus crassis. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Troglodytes Europæus.

7. Scopulacorne. M. Testaceum, glabrum et nitidum; capite pallide fulvo et maculis piceis in margine orbitali et occipitali notato, ultimis antennarum segmentis fasciculo piloso terminatis, laterali utroque; prothoracis margine valde antice producto. Long. $\frac{3}{4}$—1. Hab. Rallus aquaticus.

8. Sinuatum. N. Testaceum flavum nitidum, pubescens; suturis pallidis, capite macula fusca ante oculos notato. Long. $\frac{1}{3}$. Hab. Parus major.

* * Abdomine rotundato.

9. Mesoleucum. M. Pallide testaceum pubescens; capite subconico, cum maculis quatuor piceo-nigris; abdomine fasciis obscurioribus cincto. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Corvus frugilegus.

10. Nigro-pleurum. M. Castaneum, nitidum, pubescens; prothorace obconico, cum uno transverso, et quatuor semi-obliquis sulcis; abdomine lato, sub-ovato, cum maculis in margine laterali. Long. $\frac{1}{2}$. Hab. Alca Torda.

11. Giganteum. M. Fulvo-flavum, nitidum; capite notula fusca utrinque distincto; prothorace signo cruciformi impresso et laterali margine reflexo Long. 1. Hab. Columba Œnas.

12. Perdicis. M. Obscure testaceo-flavum, pubescens; capite amplo, semilunari, in clypeo, macula fusca

utrinque et ante oculum, fascia notato; prothorace capite vix arctiore et sub-elliptico cum tribus longitudinalibus lineis et una transversa abdomine lato. Long. $\frac{2}{3}$. Hab. Perdix cinerea.

13. Transversum. M. Piceum nitidum pubescens, capite semilunari, maculis duobus amplis et fere nigris distincto, prothorace elliptico, abdomine ovali et latissimo; pedibus crassis. Long. $\frac{3}{4}$. Hab.

14. Strepsilæ. M. Pallide flavum, nitidum, pubescens, pilis partim nigris partim albis; capite semilunari fasciis brevibus castaneis in margine laterali oblique distincto; prothorace obconico cum linea in fronte transversa. Long. $\frac{1}{2}$. Hab. Strepsilas collaris.

15. Ridibundis. M. Piceum, nitidum, pubescens; capite semilunari et saturate castaneo cum nota nigra utrinque suturalibus marginibus pallidioribus; pedibus crassis. Long. $\frac{1}{2}$. Hab. Larus ridibundis.

16. Icterum. M. Fulvum, læve et pubescens; capite immaculato; prothorace signo cruciformi in medio depresso; abdomine fasciis, castaneis distincto. Long. $\frac{1}{2}$. Hab. Tringa variabilis.

17. Carduelis. M. Pallide fuscum, capite macula picea utrinque notato prothorace; saturate fusco cum linea transversa; antice puncturis duobus terminata. Long. $\frac{1}{2}$. Hab. Fringilla carduelis.

18. Cucullare. M. Testaceum, capite, lunula utrinque temporali punctisque duobus clypei fuscis. Long. $\frac{1}{2}$—$\frac{3}{4}$. Hab. Sturnus vulgaris.

19. Tridens. M. Fusco-testaceum; capite pedibus incisurisque, segmentorum pallidis; stria occipitis punctoque genarum utrinque nigris; clypeo maculis; 3 fuscis. Long. $\frac{2}{3}$. Hab. Fulica atra.

20. Gonophaeum. M. Pallide-testaceum, fusco-fasciatum; capite macula elliptica genarum puntisque, 4 clypei nigris. Long. 1. Hab. Corvus corax.

21. Lutescens. M. Pallidum, fasciis fulvo-testaceis; capite punctis 5, obsoletis fulvis. Long. $\frac{3}{4}$. Hab. Totanus maculatus.

22. Leucoxanthum. M. Testaceum, incisuris pallidioribus; capite hemisphaerico, signaturis 5, fulvis. Long. $\frac{2}{3}$. Hab. Anas crecca.

Sub-Genus III. NITZSCHIA.

1. Burmeisteri. N. Elongata, omnino saturate castanea, lævis nitidus; capite in medio valde concavo; mesothorace transverso; abdomine depresso, tibiis posterioribus incisis. Long. 1—$1\frac{1}{4}$. Hab. Cypselus apus.

Sub-Genus IV. TRINOTON.

1. Conspurcatum. T. Elongatum piceo-castaneum, nitidum et pubescens; capite transverso triangulari; margine pallide fulvo, abdomine sub-convexo, fasciis abdominalibus in margine fere nigris et bifurcatis; suturis pallidis, femore annulo nigro ad apicem cincto. Long. 3. Hab. Cynus Olor. et Anser ferus.

2. Luridum. T. Castaneum, nitidum pubescens; capite obtuse-triangulari, clypeo fasciis duobus nigris utrinque distincto; abdomine cylindrico, plano, cum fasciis transversis bifurcatis priori similibus sed magis distinctis, pedibus crassissimis. Long. 2. Hab. Genus Anas, et Mergus.

3. Squalidum. T. Pallide flavo-cinerascens, nitidum læve; capite maculis quatuor nigris in margine laterali notato; thorace fasciis nigris et femore ad apicem annulo nigro distinctis. Long. $1\frac{1}{2}$. Hab. Genus Anser.

4. Lituratum. T. Brevius latiusque, pallidum, signaturis fuscis obsoletis; pedibus gracilioribus, longioribusque. Long. $1\frac{1}{2}$. Hab. Mergus albellus.

Sub-Genus V. EUREUM.

1. Cimicoides. E. Fulvo-castaneum nitidum et pubescens; abdomine lato et pene orbiculari, occipite utrinque tuberculato. Long. $1\frac{3}{4}$. Hab. Cypselus apus.

2. Malleus. E. Latum concolor sub-fuscum, oculis nigris; capite maximo pronotoque minori semilunatis, brevissimis. Long. $\frac{3}{4}$. Hab. Hirundo rustica.

Sub-Genus VI. LAEMOBOTHRIUM.

1. Laticolle. L. Obscure fulvum, læve, nitidum et pubescens; capite maculâ amplâ sub-triangulari utrinque notato; abdominis laterali et pedum superiori margine nigro. Long. $3\frac{1}{2}$. Hab. Falco subbuteo.

2. Giganteum. L. Fulvo-testaceum, abdominis disco dilutiori; capite maculis 3 nigris una trigona verticali, reliquis duabus transversis occipitalibus. Long. $3\frac{2}{3}$. Hab. Buteo vulgaris, et Circus rufus.

3. Hasticeps. L. Pallidum, clypeo thoraceque fuscis; pronoto punctis 2 posticis pallidis. Long. $2\frac{1}{2}$. Hab. Falco tinnunculus.

4. Atrum. L. Atrum opacum, pedibus piceis. Long. 2. Hab. Fulica atra.

5. Gilvum. L. Pallide fulvum; capite quatuor nigris maculis notato, et metathorace antice duobus, femore linea fuscâ distincto. Hab. Botaurus Stellaris.

Sub-Genus VII. PHYSOSTOMUM.

1. Mystax. P. Pallide testaceum, capite et thorace obscuriobus, lævissimum, nitidum, metathoracio et abdominis laterali margine piceo; occipitis processibus brevibus et sub-acutis. Long 2. Hab. Turdus pilaris.

2. Bombycilla. P. Pallide testaceum læve nitidum,

capite latiore prothorace, clypeo lato, pedibus brevibus et crassis. Long. 1. Hab. Bombycilla garrula.

3. Irascens. P. Pallide testaceum, margine abdominis externo ferrugineo; occipite utrinque acutissimo, longissimo. Long. 1. Hab. Fringilla Cœlebs.

4. Frenatum. P. Album, capitis pronotique stria intramarginali, abdominisque margine nigris. Long. $1\frac{1}{4}$. Hab. Regulus verus?

5. Sulphureum. P. Sulphureum, capite biplagiato, margine omni linea intramarginali nigra. Long. $1\frac{1}{2}$. Hab. Oriolus galbula.

Genus II. GYROPUS.

1. Ovalis. G. Pallide-flavo-albus, capite et thorace nitide ferrugineis et illo transverso, lobis temporalibus productis, abdomine amplo et pene orbiculari, pedibus crassis, quatuor posterioribus arcuatis; unguibus longis arcuatis et validis. Long. $\frac{1}{4}$. Hab. Cavia Cobaya.

2. Gracilis. G. Elongatus, pallide fulvo-flavus, leviter pubescens, capite et thorace obscurioribus, abdominis segmentis fasciis striatis transversis ad suturas distinctis tarsis et unguibus minutissimis et brevissimis. Long $\frac{1}{3}$. Hab. Cavia Cobaya.

Genus I. LIOTHEUM. (*Nitzsch.*)

Burmeister, Stephens, Children, De Haan.—*Pediculus*, Linnæus, Fabricius.—*Ricinus*, De Geer, Latreille.—*Nirmus*, Hermann, Olfers, Leach, Samouelle.—*Pulex*, Redi.

GENERIC CHARACTER.

Head depressed, horizontal; mouth beneath, placed near the anterior margin.

Mandibles short, strong, terminated by two teeth.

Maxillæ obscure.

Labrum and Labium, with the margin free, slightly notched in front.

Maxillary palpi long, exserted, filiform, four jointed.

Labial palpi very short, two jointed.

Antennæ four jointed, inserted beneath the lateral margin of the head, frequently inconspicuous from being concealed in a fovea, somewhat pedunculate, the last joint oval or sub-rotundate, forming a knot.

Eyes generally below the lateral margin of the head, frequently obscure.

Thorax of two or three segments.

Tarsi straight, formed for running, two jointed, the first joint short, the second very long, the first generally and occasionally the second furnished with a fleshy involute or straight pulvillus; ungues two, divaricate, slightly curved towards the apex.

The Liotheidæ are easily distinguished from the Philopterdæ, in whose society they live; (both families being found on several kinds of birds, as Hawks, Pigeons, Turkeys, Storks, and Poultry,) not only by the presence of maxillary palpi, the number of joints in the antennæ, and the conformation of the tarsi, but also by the celerity with which they run on the smoothest surfaces, while the latter walk slower and with rather an ambling gait. The former also creep overthe hands of the party who may be examining a bird, and are difficult to get rid of, while the Philopteridæ never do. I suspect this genus, or at least some of the species, occasionally feed upon the blood of the bird as well as the feathers, as I have observed the intestine in some instances filled with a red fluid, as well as minute particles of feathers.

Sub-Genus I. COLPOCEPHALUM. (*Nitzsch.*)

SUB-GENERIC CHARACTER.

Head broad, sometimes slightly panduriform, the anterior separated from the posterior, by a deep orbital depression on the lateral margin; *antennæ* short, but prominent, pedunculate, terminated by a sub-globular or oval knob; *mesothorax* distinct, short, and narrow; *abdomen* of ten segments, oblong, oval, or ovate.

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1. Colpocephalum flavescens.

Plate XVIII. Fig. 2.

Fulvous, segments of the abdomen with darker transverse bands; head with a black orbital spot on each side.

Colpocephalum flavescens. Nitzsch. Germ. Mag. iii. p. 298. Steph. Cat. pt. ii. p. 333. Burmeister Handbuch ii. pt. ii. 438. Lyonet, Mem. du Muse. tom. 18. p. 262. pl. 12. fig. 1.

Pale, tawny-yellow, shining, and smooth; head sub-panduriform; clypeus rotundate and entire, with two dark marginal spots, orbital depression very deep, with a large black trapezoidal spot before each eye, united by a chestnut band to transverse black interrupted fascia at the occiput, temporal margin very rotundate and convex, with several long hairs, base truncate; eyes prominent; antennæ with the first joint thick, second considerably smaller and cylindrical, third cup-shaped and transverse, fourth the largest and ovate; prothorax short, transversely elliptical, with a slight depression in the centre; mesothorax very small; metathorax large, as wide as the head, sub-conical, base rotundate; abdomen with the sutures pale yellow, with long hairs, the lateral margin of each segment deep tawny, sometimes approaching to pitchy brown; legs pale tawny-yellow, rather stout, apex of the femora with a dusky spot, anterior femora

large, lower margin involute; tibiæ abruptly clavate. Length $\frac{3}{4}$.

This species is very extensively spread among the different species of the genus Falco (Linn.). I have received it from my brother, taken off the Honey Buzzard; Mr. Wallace sent me specimens taken on the Peregrine Falcon in the Isle of Man; and I have found it in abundance on the Golden Eagle. Dr. Burmeister says it infests the Kite and the White-tailed Eagle, and likewise the Bearded Vulture (Gypäetus barbatus). To the Earl of Derby I am indebted for several examples from the Harpy Eagle (Harpyia Destructor). On the 14th of Nov. 1837, Mr. Yarrell exhibited, at a Meeting of the Zoological Society of London, a quill from the wing of the above bird, which had died while in the menagerie of his lordship at Knowsley, and which was found upon examination to be infested with a great number of a species of Colpocephalum. It appeared that these minute creatures had chosen for their place of retreat the hollow of the large quill feathers, which were filled with their exuviæ; two circular apertures situated near the base of the quill afforded the animals access to its interior. Another quill infested with the above, his lordship obligingly forwarded to me, with the following remarks: "My superintendant lately found in a young Harpy Eagle, who was not moulting kindly, two feathers, of which the quills when extracted were filled with a substance he could not make out, he opened one and found the whole base of the quill filled with lice, at that time alive, but they soon died; there was at first no apparent opening, but on a close microscopic examination two small holes were observed at the base of the web, since then he has found and extracted four more; in one, besides the lice, observing something to move, he opened it and found a large white maggot." From the hundreds of skins accumulated in one quill, and to whose interior there had been no access but through the

small orifices mentioned, it would appear that this species of Colpocephalum at least seeks a place of shelter when about to undergo so important a change as the shedding of its entire skin, similar to what we know takes place with Crustaceans. I alluded before to the circumstance that certain genera or species of Nirmi appear to have favourite locations on the animals they infest. The specimen of the *Golden Eagle* from which I obtained the *Lipeurus 4-pustulatus* and *Docophorus aquilinis*, I also obtained the present species; each however seemed to prefer a distinct part, at which head quarters were held, for while the first, as I have said, were packed close side by side upon the mid rib of the large feathers of the wings and tail, the second prefered the head and that part of the body covered by the wings; the third, the *C. flavescens*, were congregated in numbers at the extreme base of the quills of the primaries and secondaries, among the fine down which protects the insertion of the quills.

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2. Colpocephalum fregili.—*Denny*. (Louse of the Cornish Chough.)

Plate XX. Fig. 4.

Head bright chestnut-yellow, with black orbital spots; thorax deep chestnut; abdomen pale fulvous, lateral margin pitchy; femora of the second and third pairs of legs notched near the apex.

Head sub-panduriform; clypeus rotundate, entire, with two deep chestnut angular spots on the anterior margin, orbital depression very deep, with a large black spot united by a chestnut band to a narrow black facia at the occiput, temporal margin large, rotundate, and convex, base truncate and concave; eyes prominent; antennæ with the first joint large conical, second very slender and cylindrical, third cup-shaped,

fourth very large, apex obliquely truncate; prothorax small, transversely elliptical, with a cruciform depression in the centre, and a line on each side; mesothorax not visible; metathorax large, as wide as the head, depressed in the centre; abdomen rather broad, sub-truncate, fulvous yellow, segments nearly equal, sutures pale, lateral margin pitchy, the first and last two segments dark chestnut; legs pale brown, superior margin of the femora and tibiæ dark; femora of the second and third pairs of legs notched near the apex; tibiæ very abruptly clavate; tarsi long and thick. Length $\frac{1}{2}$.

The only specimens of this species which I have seen I received from J. R. Wallace, Esq. of Douglas, Isle of Man, who took them from the Cornish Chough (Fregilus graculus). It resembles the preceding species in many respects, but when the two insects are in juxta-position, the specific identity of each is very evident. I possess specimens resembling this species in general appearance, but smaller, said to be from the Coot (Fulica atra). These I preferred leaving in terra incognita, until I am better convinced of their locality.

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3. Colpocephalum turbinatum.—*Denny.* (Louse of the Pigeon.)

Plate XXI. Fig. 1.

Chestnut, shining; head broad, with two dark orbital spots extending to the base; metathorax wide; abdomen turbinate, the first segment very large.

Head bright, chestnut-yellow, with two deep brown spots on the anterior margin, two black orbital patches, and a transverse sinuated band at the base, connected by a deep chestnut fascia on each side; antennæ fulvous, short; eyes prominent and black; prothorax nearly as wide as the

head, elliptical; mesothorax obscure; metathorax transverse; abdomen turbinate, pale chestnut, darkest on the sides, sutural margins pale, and densely ciliated, last three segments bright tawny, lateral margin somewhat serrulate; legs long, fulvous, and hairy, with a dark band on the superior margin. Length $\frac{1}{2}$ to $\frac{2}{3}$.

Communicated by my brother from the Turbet Pigeon: in some specimens the central portion of the abdomen is pale yellow-white.

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4. Colpocephalum zebra. (Louse of the White Stork.)

Plate XIX. Fig. 2.

Elongate, dark brown; head large, sub-panduriform, with an interrupted black fascia on each side; abdomen deeply emarginate, sutural margins pale.

Colpocephalum zebra. Nitzsch. Germ. Mag. iii. p. 298. Steph. Cat. pt. ii. p. 333. Burmeister Handbuch ii. pt. ii. p. 438.

Head large, tawny-yellow, orbital sinus deep, a broad interrupted black fascia down each side, united at the base, leaving a bilobate space in the centre; clypeus transverse and ciliated, base concave; eyes prominent; antennæ pale yellow; prothorax elliptical, with a cruciform depression in the centre, and a line on each side; mesothorax very small; metathorax small, transverse, lateral margins and base rotundate, the latter fulvous; abdomen oblong, deeply emarginate, each segment with a broad transverse band of deep brown above, sutural margin fulvous; legs pale, superior margin dusky. Length 1.

Communicated by Dr. Burmeister of Halle from the White Stork (Ciconia alba).

5. Colpocephalum ochraceum.

Plate XVIII. Fig. 3.

Elongate, fulvous, shining and pubescent; head with two large dark orbital patches; abdomen with a series of dusky spots down the lateral margin; anterior femora large and involute.

Colpocephalum ochraceum. Nitzsch. Germ. Mag. iii. p. 299. Steph. Cat. pt. ii. p. 333. Burmeister Handbuch ii. pt. ii. p. 438.—Pulex avis pluvialis. Redi. Expe. pl. ix. fig. sup.—The Louse of the Cormorant? Albin's Spi. pl. xlvi. fig. sup. Shaw. Gen. Zool. vi. 120. fig. dext. sup.

Head sub-panduriform; clypeus narrow, rotundate, with two angular spots on the margin, orbital sinus very deep, with a black quadrangular patch, centre concave, base broad, with a blackish transverse band on the occiput, and several long hairs from the lateral margin; antennæ pale, the first joint thick, second very short and slender, the third transverse, cup-shaped, fourth large, obliquely truncate; prothorax rotundate, lateral margin produced and acute, with a cruciform depression in the centre; mesothorax transverse, narrow; metathorax transversely quadrate, with a fuscous spot on each side, base much the broadest; abdomen somewhat elliptical, sutural margins pale, lateral margin with a series of fuscous patches; legs thick, anterior femora enlarged, with the margin involute; tibiæ clavate, fringed on the exterior with long hairs. Length 1.

This species is found upon various Grallatorial birds. Mr. Tweedy of Truro has sent it to me from the Oystercatcher (Hæmatopus Ostralegus), Common Sandpiper (Totanus hypoleucus), and Ringed Plover (Charadrius Hiaticula); Mr. Heysham of Carlisle from the Brown Snipe (Macroramphus grisea); Mr. Thompson of Belfast from the Bar-tailed Godwit (Limosa rufa), and my brother from the Lesser Tern (Sterna minuta), and Dunlin (Tringa variabilis). Dr. Burmeister states also upon the Lapwing (Va-

nellus cristatus), and Shaw and Albin, *if* their figures are of the same insect, give the Cormorant.

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6. Colpocephalum piceum.—*Denny*. (Louse of the Sandwich Tern.)

Plate XVIII. Fig. 4.

Deep liver-colour, almost black, very smooth and shining, large and punctured; prothorax sub-quadrate.

Head large; clypeus broad and rotundate, with three foveolæ, orbital sinus very deep, vertex concave and punctured, occiput truncate, with black clypeal, orbital and basal spots like the preceding; eyes prominent; antennæ dusky, the first joint thick, second very small and cylindrical, third ob-conical, fourth conical; prothorax nearly as wide as the head, sub-quadrate, lateral margin produced anteriorly on each side, a transverse and longitudinal depression in the centre, somewhat resembling the letter T; mesothorax very short, transverse; metathorax transversely sub-conical, base truncate; abdomen ovate, rather paler than the head and thorax, with black lateral fasciæ to each segment, except the last three; legs pitchy, rather thick; anterior femora not involute. Length 1.

The only specimen of this species which I have seen was forwarded by Mr. Thompson, who took it from the Sandwich Tern (Sterna Cantiaca). It might on first sight be supposed to be only a dark variety of the preceding, but when the two insects are placed together, there can remain no doubt of its specific difference, the larger size of the head, different form of prothorax and antennæ, and intensity of colour are very conspicuous, the lateral patches can only be seen by transmitted light.

7. Colpocephalum subæquale. (Louse of the Rook.)

Plate XVIII. Fig. 5.

Obscure, testaceous-yellow; metathorax very large, with a broad black fascia at the base; abdomen with fuscous bands.

Colpocephalum subæquale. Nitzsch. Germ. Mag. iii. p. 299. Steph. Cat. pt. ii. p. 333. Burmeister Handbuch ii. pt. ii. p. 438. Children's Appen. to Back's Land Expe. p. 539. spe. 10.

Head sub-panduriform, with two black angular spots in front, a large orbital patch on each side, and a narrow marginal band, vertex depressed, occiput concave; eyes prominent; antennæ pale, fulvous yellow; prothorax sub-orbicular, with a narrow black lateral margin, anterior part with a transverse depressed line, base ciliated; mesothorax very small, sinuated behind; metathorax large, sub-conical, yellowish ash, base rotundate, with a broad black transverse band, lateral angles acute; abdomen oval, depressed down the centre, each segment with a broad fuscous transverse fascia, and sutures pale; legs thick and strong, fuscous; the anterior femora sub-angular. Length $\frac{1}{2}$ to $\frac{2}{3}$.

This species is a common parasite upon the Rook (Corvus frugilegus), and sometimes swarm to a degree scarcely credible, and no doubt in some instances occasions the death of the individual. The Rev. L. Jenyns tells me his specimens were taken from a Rook which was picked up in a dying state, and swarming with these insects; Mr. Thompson found the same species on the Carrion Crow (Corvus corone), and the Raven (Corvus corax) at Belfast.

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8. Colpocephalum eurysternum. (Louse of the Magpie.)

Plate XVIII. Fig. 6.

Obscure testaceous, yellowand shining; abdomen with the sutures pale; legs thick, dull chestnut, variable in shape.

Menopon eurysternum. Burmeister Handbuch ii. pt. ii. p. 439.—Pediculus Picæ. Linn. Syst. Nat. ii. 1018. 16. Fabr. Syst. Ent. 807. 16. Syst. Inst. ii. 479. 18.—Louse of the Magpie. Albin. Aran. 76. tab. 45. Redi. Expe. tab. 5.

Head testaceous-yellow, broad; clypeus rotundate, with two dark spots in front, and a transverse fascia at the base, orbital sinus deep, with a large black patch before each eye, vertex concave, temporal margin prominent, with several long hairs; antennæ fulvous, the first joint short and thick, second very small, third semicircular, fourth large and subglobular; prothorax small, much narrower than the head, rotundate; mesothorax very small; metathorax transverse, base slightly produced in the centre; abdomen large, broad, and ovate, with pitchy bands, sutures pale, lateral margin with a deep impressed line from the first to the sixth segment; legs thick, dull chestnut, with a dusky spot at the apex of the femora and tibiæ; anterior femora large and involute, second and third variable in shape. Length. 1.

Infests the Magpie (Corvus pica). I have ventured to remove this species from the sub-genus *Menopon*, from an impression that the temporal sinus is more characteristic of the present sub-genus.

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9. Colpocephalum importunum. (Louse of the Heron.)

Plate XVIII. Fig. 1.

Pitchy, shining, and pubescent; head obtusely pyramidal, with a black, orbital patch on each side; abdomen claviform.

Colpocephalum importunum. Nitzsch. MSS.

Head deep chestnut, large, transverse, obtusely pyramidal; clypeus sinuated and ciliated with hairs of different lengths, lateral margin with a large black patch before the eyes, orbital sinus shallow, base very wide, truncate; an-

tennæ obscure; prothorax narrower than the head, sub-elliptical, with a transverse depressed line in the centre; mesothorax very small and narrow; metathorax semicircular; abdomen claviform, deep pitch-colour, sutural margins paler; legs chestnut, long, and slender, anterior femora sub-angular, margin involute; tibiæ clavate, densely ciliated on the exterior margin; posterior tarsi very long. Length 1.

Not uncommon upon the Heron (Ardea cinerea); young specimens are of a fine chestnut.

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10. COLPOCEPHALUM NYCTARDE.—*Denny.* (Louse of the Night-Heron.)

Plate XX. Fig. 9.

Deep chestnut, shining and smooth; head large, obtusely pyramidal, with two black orbital patches; abdomen short, obtusely ovate.

Head and prothorax bright chestnut, the former very broad at the base, obtusely pyramidal with a large black quadrangular orbital spot on each side; clypeus transverse, with two deep brown spots on the anterior margin, and three at the occiput, lateral margin deeply sinuate, with a few long hairs; eyes prominent; prothorax sub-rhomboidal, lateral angles acute, a transverse impressed line across the centre, from which proceeds a short longitudinal one; mesothorax very short; metathorax nearly as wide as the head, transverse; abdomen broad, ovate, deep chestnut, rather paler down the centre, the last two segments fulvous; legs pale chestnut, thick, and strong; tibiæ abruptly clavate. Length $\frac{1}{2}$ to $\frac{2}{3}$.

The only examples of this species which I have seen, I found beneath the wing of a young Night-Heron (Ardea Nycticorax).

11. Colpocephalum 4 pustulatum. (Louse of the White Stork.)

Plate XVIII. Fig. 8.

Fulvous, smooth, and shining; head pale, with the clypeal, orbital, and occipital markings fuscous; mesothorax very narrow; abdomen with chestnut bands darkest at the lateral margin.

Colpocephalum 4 pustulatum. Burmeister Handbuch ii. pt. ii. p. 438. 5.

Head and prothorax pale tawny-yellow, the former transverse, with two small spots on the anterior margin, and two large sub-quadrate at the orbits, terminating near the vertex in a black patch; occiput with two transverse chestnut fasciæ, lateral margin slightly sinuate; eyes flat; prothorax sub elliptical, with a depressed line across the upper part, and a longitudinal one at each lateral angle; mesothorax very small and narrow; metathorax transverse, sub-conical, nearly as wide as the head; abdomen elongate ovate, segments nearly equal, with broad chestnut bands, sutural margins pale tawny-yellow; legs tawny, thick, and strong, the superior margin darker. Length 1 to $1\frac{1}{4}$.

To Dr. Burmeister's kindness I am indebted for this species, who took it from the White Stork (Ciconia alba).

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12. Colpocephalum haliæeti.—*Denny.* (Louse of the Osprey.)

Plate XIX. Fig. 1.

Bright fulvous, shining, and smooth; head transverse, with two large pitchy orbital spots; mesothorax short, transverse; abdomen oval, with chestnut bands.

Head pale fulvous-yellow, very wide; clypeus rotundate, with two deep chestnut angular spots in front, and two at the occiput; orbital sinus shallow, terminating in a large

pitchy trapezoidal spot; occiput concave; prothorax transversely quadrate, wider before than behind, with a depressed line across the front; mesothorax very short; metathorax transverse, as wide as the head, posterior angles produced, base rotundate; abdomen large oval, pale fulvous, banded with chestnut, the bands much darker on the sides, sometimes pitchy; legs slender, pale chestnut. Length $\frac{3}{4}$.

This species, which is very variable in colour, I have found on the Osprey (Pandion haliæetus), from which bird I have also received specimens taken in Northumberland, by Mr. Selby, and from Norfolk by my brother.*

Sub-Genus II. MENOPON. (*Nitzsch.*).

SUB-GENERIC CHARACTER.

Head broad, semi-lunar or trapezoidal; temporal portion not separated from the clypeus by a deep sinuosity of the lateral margin; antennæ shorter than the head, clavate, generally obscure; mesothorax small, scarcely visible or frequently absent; abdomen of ten segments.

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* Abdomen elongate.

1. Menopon pallidum. (Louse of the Domestic Fowl.)

Plate XXI. Fig. 5.

Elongate, pale straw-colour, shining and smooth; head slightly sinuated on each side with pitchy spots.

* Dr. Burmeister enumerates three other species which are most probably natives of Britain, which, however, have not come under my cognizance. These are viz.—

1. C. inæquale: luteo-testaceum, abdomine fasciis fuscis in femina bis interruptis; mesonoto fascia integra. Long. $\frac{1}{3}$—$\frac{1}{2}$. Hab. Picus Martius.
2. C. trochioxum: rufo-testaceum, capitis signatura nigra, utrinque interrupta; fasciis abdominalibus obsoletis. Long. $1\frac{1}{4}$. Hab. Ardea stellaris.
3. C. umbrinum: dilute fuscum, capite segmentisque abdominalibus pallide punctatis, in ipsis punctis setigeris. Long. 1. Hab. Tringa subarquata.

Menopon pallidum. Nitzsch. Germ. Mag. iii. p. 299. Steph. Cat. pt. ii. p. 334. Burmeister Handbuch, ii. pt. ii. 440.—Nirmus trigonocephalus. Olfers. 90.—Pediculus Gallinæ. Linn. Syst. Nat. ii. p. 1020. 32. Faun. Suec. 1959. Fabricius Spec. Insec. ii. Syst. Ent. 809. 29. Syst. Inst. ii. 482. 33. Geoff. Inst. ii. 601. ii. Panz. Faun. Germ. 51. fig. 21. Stew. Ele. ii. p. 299. Turton, iii 698. Schrank. Beytr. 114. 3.?—Pulex capi. Redi Exper. tab. 16. fig. 1.

Head obtusely triangular, slightly sinuated on the lateral margin with a dark pitchy spot before the eyes ; clypeus with two large chestnut spots, vertex depressed, base truncate ; antennæ capitate, conspicuous, the first joint long, cylindrical, second very short, third transverse, fourth very large and oblong, terminated by a fasciculus of hairs ; eyes dark ; prothorax the width of the head, transverse, sub-elliptical, with a depressed line across the centre, and one on each lateral margin, base with several long hairs; metathorax large, sub-conical, posterior margin rotundate, lateral angles acute ; abdomen elongate ovate, segments equal; stigmatic orifice deep; legs rather thick; anterior femora large and rotundate, tibiæ clavate, with a row of stiff hairs on the superior surface. ♂ $\frac{1}{2}$ ♀ $\frac{3}{4}$.

Found in great abundance on Poultry, running over the hands of those who are plucking fowls, and difficult to brush off, from the smoothness of their bodies.

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2. Menopon fulvo-maculatum.—*Denny.* (Louse of the Quail.)

Plate XXI. Fig. 6.

Fulvous yellow and pubescent; head semi-lunar, with a pitchy transverse spot on each side ; abdomen clavate, with pale spots on the lateral margin.

Head semi-lunar, base concave, lateral margin with a pitchy transverse spot ; prothorax large, ob-conical, truncate behind, with a depression down each lateral margin, and one

in the centre, anterior part with a transverse impressed line; metathorax small, transverse, lateral angles acute; abdomen clavate, obscure chestnut, with fulvous spots on the lateral margin of each segment, except the last three; legs long and thick; femora stout; tarsi long, rather thick. Length 1.

I have received this species from my brother, taken on the Quail (Perdix Coturnix), and also from the Common Pheasant (Phasianus Colchicus), in Norfolk.

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3. Menopon fusco-cinctum.—*Denny*. (Louse of the Red-backed Shrike.)

Plate XXI. Fig. 4.

Elongate, olivaceous, shining and pubescent; head with a pitchy spot on each side; prothorax with three punctures united by a line; mesothorax distinct; sutural rings pale.

Head sub-conical, vertex depressed, lateral margin with a pitchy transverse spot before each eye, and several long hairs; prothorax ob-conical, truncate behind, anterior part with three punctures connected by a transverse impressed line, lateral margin depressed; mesothorax short and transverse; metathorax short, sub-conical, truncate behind; abdomen elongate, with dark olivaceous bands, sutural margins pale, inclining to fulvous; legs long; femora thick. Length 1.

I obtained this species from the Red-backed Shrike (Lanius collurio).

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4. Menopon pici.—*Denny*. (Louse of the Green Wood-pecker.)

Plate XX. Fig. 5.

Bright, fulvous and shining; head obtusely sub-triangular; prothorax ob-conical, transverse; abdomen banded with pale chestnut.

Head obtusely sub-triangular, vertex depressed; clypeus with a chestnut spot on each side, and a narrow diagonal fascia before each eye, base truncate; eyes black; prothorax nearly as wide as the head, transverse, ob-conical, base slightly produced in the centre, bordered with long hairs; metathorax the width of the head, transverse; abdomen obtusely elliptical, pale fulvous, each segment with a broad band of pale chestnut, except the last two, lateral margin serrulate; legs obscure fulvous, the superior margin dusky. Length $\frac{3}{4}$.

Infests the Green Wood-pecker (Picus viridis), communicated by the Rev. L. Jenyns from Cambridgeshire, and from Norfolk by my brother.

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5. Menopon citrinellæ.—*Denny.* (Louse of the Yellow Bunting.)

Plate XXI. Fig. 3.

Pale fulvous-yellow, shining and pubescent; head semilunar, with two black spots; prothorax truncate before and behind.

Head semilunar, with a conical black spot before each eye, and a narrow sinuated transverse band at the occiput, vertex concave; eyes black; prothorax wider before than behind, anterior and posterior margin truncate, a depressed line across the front, united with two lateral lines; metathorax large, transverse, base slightly rotundate; abdomen oblong, lateral margin somewhat serrulate, last segment densely pilose; legs long. Length $\frac{1}{2}$ to $\frac{3}{4}$.

Found on the Yellow Bunting (Emberiza citrinella); I received one specimen from the Pied Wagtail (Motacilla alba).

6. MENOPON TROGLODYTI.—*Denny*. (Louse of the Common Wren).

Plate XVIII. Fig. 7.

Pale yellow-white, shining; mesothorax distinct; abdomen with dark chestnut bands; legs thick.

Head sub-trilobate; clypeus rotundate, with two pitchy angular spots in front, connected by a narrow band, and extending to a conical patch at the temporal sinus; vertex depressed; occiput with a transverse sinuated band; prothorax semicircular, with a depressed line in front, united to a curved one on each side; mesothorax short; metathorax transverse, base rotundate; abdomen oval, with a depressed line down each side, centre pale fulvous-yellow, the first eight segments with deep chestnut band at the base, and a smaller patch on the lateral margin, sutures sub-rotundate in the centre, sinuate on each side; legs very thick; femora enlarged and revolute. Length $\frac{1}{2}$ to $\frac{3}{4}$.

Found on the Common Wren (Troglodytes Europæus). In some varieties the spots on the clypeus are *not* united by a band. *Scopoli* enumerates a species, the *Pediculus albiventris*, as infesting the same Bird, may it not be synonymous with the above? the young specimens of which have the abdomen without the transverse bands.

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7. MENOPON SCOPULACORNE.—*Denny*. (Louse of the Water Rail.)

Plate XVIII. Fig. 9.

Testaceous, smooth, and shining; head pale fulvous, with pitchy spots on the orbital and occipital margins, last joint of the antennæ terminating in a tuft of hairs; prothorax much produced on each lateral margin anteriorly.

Head sub-trapezoidal, pale fulvous-yellow; clypeus with

a transverse line and three fuscous spots, a pitchy triangular patch before each eye, and a sinuated band at the occiput; antennæ prominent, the first joint short and cylindrical, second smaller, third transverse, fourth very large and ovate; apex truncate, terminated by a fasciculus of hairs; prothorax sub-quadrate, with an angular protuberance on each side, anterior part rotundate; metathorax trapezoidal; abdomen ovate, depressed in centre, testaceous yellow, lateral margin fuscous; apex densely fringed with hairs; legs long and thick. Length $\frac{3}{4}$ to 1.

This species approaches in many respects the *M. tridens* of Dr. Burmeister, which he says is found on the Coot (Fulica atra), but as he does not allude to the prominences of the prothorax, or the peculiarity of the last joint of the antennæ, I am induced to think it is a distinct species, besides I have never found or received any specimens of Menopi from that bird. I have found it however two or three times on the Water Rail (Rallus aquaticus), and also on the Little Grebe (Podiceps minor), and Mr. Thompson sent me examples from the Water Gallinule (Gallinula chloropus).

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8 Menopon sinuatum. (Louse of the Great Titmouse).

Plate XX. Fig. 6.

Testaceous yellow, shining and pubescent, sutures pale; head with a fuscous patch before the eyes.

Menopon sinuatum? Burmeister Handbuch ii. pt. ii. p. 440.

Head semilunar, depressed in the centre, a dark fuscous patch before each eye; occiput concave; prothorax rotundate, with a depressed line across the anterior part; metathorax sub-conical; abdomen ovate, duller than the head and thorax; sutural margins pale and prominent; legs long and slender. Length $\frac{1}{3}$.

Communicated by the Rev. L. Jenyns, from the Great Titmouse (Parus major).

* * Abdomen rotundate.

9. Menopon mesoleucum. (Louse of the Rook and Hooded Crow.)

Plate XX. Fig. 2.

Pale testaceous and pubescent; head sub-conical, with four pitchy black spots; abdomen with darker bands.

Menopon mesoleucum. Nitzsch. Germ. Mag. iii. p. 300. Steph. Cat. pt. ii. p. 334. Burmeister Handbuch ii. pt. ii. p. 439.—Ricinus cornicis. De Geer, vii. p. 76. tab. 4. fig. ii. (pupa).—Nirmus cornicis. Latr. G. i. 169? Samou. Ent. Com. 143?

Head sub-conical, vertex concave; clypeus with a pitchy spot on each lateral margin, two large spots before the eyes; occiput slightly concave; eyes fuscous; prothorax nearly as wide as the head, semicircular, with a depressed marginal line, and a transverse one in front; metathorax transverse, sub-conical; abdomen obtusely ovate with fuscous bands, sutural margins pale testaceous; legs thick and strong; anterior femur the largest, somewhat spoon-shaped, superior margin involute. Length $\frac{1}{2}$ to $\frac{3}{4}$.

A common parasite on the Rook (Corvus frugilegus), and Carrion Crow (Corvus corone), frequenting the base of the beak, and the orbital region. With the exception of the Rasorial, perhaps no birds are so much infested with Nirmi as the *Corvidæ*, and yet in none of these that I am aware, is the peculiarity of a pectinated claw found, which has been conjectured to be a provision for assisting the Birds so provided, to cleanse themselves from their parasites.* Whatever the use of such claws may be, I cannot think it is solely for the above purpose; for this reason, that of all the Nirmi, the genera Lipeurus Colpocephalum, and Menopon, adhere the closest to the feathers, and consequently all Birds infested with any of these, ought of all others to be so

* Professor Owen, Cyclopædia of Anatomy and Physiology, article "Aves," pt. iv. p. 349.

provided. It is true the Bittern and Heron have this peculiarity, upon which we find examples of both Lipeurus and Colpocephalum, but upon the Turkey, Domestic Fowl, Ducks, Geese, Pigeons, and the Eagle, which frequently swarm with their peculiar Lipeuri, and the Corvidæ, which in like manner have such multitudes of Colpocephalum, and of Menopon, no extraordinary apparatus for this purpose is seen, and again the Goatsucker has the comb-like claw, but whose Louse is very rare, and not belonging to the above genera, which fact is still more opposed to this theory. Mr. Swainson very justly remarks, "To suppose that Nature has given to one or two families of Birds the exclusive power of freeing themselves from an enemy, which in like manner infests all birds, is preposterous." The latter part of this assertion, however, requires qualifying, as all Birds are not *alike* infested, that is as to numbers, or as to the kind of parasites, vide p. 173, in which we find 8 species of lice, &c. and no peculiar provision made for their eradication.

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10. Menopon nigro-pleurum.—*Denny.*

Plate XX. Fig. 1.

Chestnut, shining and pubescent; prothorax ob-conical, with a transverse, and four semi-oblique sulci; abdomen broad, sub-ovate, with black spots on the lateral margin.

Head sub-triangular, with a depression in front, and a blackish reniform spot before each eye, base slightly concave; eyes very small and flat; prothorax ob-conical, with a fovea in the anterior part, and a transverse and four somewhat oblique sulci; mesothorax very small and narrow; metathorax wider than the head, transverse, lateral margins oblique, base convex; abdomen large, broad, somewhat abruptly ovate, lateral margins of the first six segments with a black spot, underside thickly pubescent; legs pale chestnut; femur thick, the anterior pair sub-angular. Length $\frac{1}{2}$.

This species is rather widely spread. I have found it

upon the Ruff (Machetes pugnax), and the Razor Bill (Alca Torda), Mr. Thompson has sent it me from Belfast, taken on the Red-shank (Totanus calidris), Curlew (Numenius arquata), and Kittiwake Gull (Larus trydactylus).

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11. Menopon giganteum.—*Denny*. (Louse of the Stock Dove.)

Plate XXI. Fig. 2.

Fulvous-yellow, shining; head with a small fuscous patch on each side; prothorax with a cruciform depression, lateral margin reflected.

Head large, transverse, anterior part convex, with a fuscous spot in the centre, and a small transverse patch before the eyes; vertex concave; eyes small; antennæ obscure; prothorax large, anterior part contracted, posterior semicircular, centre with a cruciform depression in the centre, lateral margin produced anteriorly, and reflexed; mesothorax small; metathorax transverse, lateral margin oblique and acute; abdomen large, obtusely ovate; legs long and thick, femora of the anterior pair sub-lobate, tarsi strong, nearly as long as the tibia. Length a little exceeding 1.

This species, which is the largest of the genus I am acquainted with, I received from my brother, who took it upon the Stock Dove (Columba Œnas), in Norwich.

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12. Menopon perdicis.—*Denny*. (Louse of the Partridge.)

Plate XXI. Fig. 9.

Obscure testaceous-yellow and pubescent; head large, semilunar, with a fuscous spot on each side of the clypeus, and band before each eye; prothorax nearly as wide as the head, somewhat elliptical, with three longitudinal lines and one transverse; abdomen broad.

Head large, transverse, semilunar; clypeus slightly pro-

duced, with a fuscous spot on each side, a fuscous band before each eye, and two narrow lines on the occiput; prothorax sub-elliptical, nearly as wide as the head, rather darker on the lateral margin, a transverse impressed line in the centre, and three longitudinal at about equal distances on the disk; mesothorax obscure; metathorax transverse; abdomen large and oval; sutures pale; legs long and slender; anterior femora with the lower margin reflected; tarsi large. Length $\frac{2}{3}$.

Common on the Partridge (Perdix cinerea).

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13. Menopon transversus.—*Denny.*

Plate XXI. Fig. 7.

Pitchy, shining, and pubescent; head semilunar, with two large nearly black spots; prothorax elliptical; abdomen oval, very broad; legs thick.

Head very broad, semilunar, with a transverse conical black spot before each eye; prothorax nearly as wide as the head, elliptical, with a dark impressed line on each side, and a transverse one in front; metathorax transverse, posterior margin rotundate; abdomen oval, pitchy-black, the last two segments and sutures of the preceding paler, densely covered with pale yellow hairs; legs fuscous, thick and strong; femora large, the anterior involute; tarsi rather short. Length $\frac{3}{4}$.

This species I have seen but two specimens of; one I found on the Kittiwake Gull (Larus tridactylus), the second on the Razor Bill (Alca Torda), the colour and more especially the very broad appearance of the whole Insect, readily distinguishes it from all the other species of Menopon.

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14. Menopon strepsilæ.—*Denny.* (Louse of the Turnstone.)

Plate XXI. Fig. 8.

Pale yellow, shining, and pubescent, the hairs black and

white; head semilunar, with short oblique chestnut bands on the lateral margin; prothorax obconical, with a transverse line in front.

Head produced in front, somewhat semilunar, posterior angles acute, base concave, two short oblique chestnut fasciæ on each side, and an impressed line to the occiput; eyes obscure; prothorax obconical, base truncate, the anterior part with a transverse line; metathorax transverse, subconical; abdomen ovate, paler than the head and thorax, pubescent, the hairs of variable lengths, black and white; legs pale fulvous; femora short and thick. Length $\frac{1}{2}$.

This species I received from my brother, who took it on the Turnstone (Strepsilaris collaris), in Norfolk.

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15. Menopon ridibundus.—*Denny*. (Louse of the Black-headed Gull.)

Plate XX. Fig. 3.

Pitchy, shining and pubescent; head semilunar, deep chestnut, with a black patch on each side, sutural margins paler; legs thick.

Head semilunar, deep chestnut, with an angular black spot on each side before the eyes; occiput concave, with several hairs on the margin; prothorax sub-triangular, base rotundate, a transverse impressed line in front, united to a semicircular one on the basal margin; metathorax not so wide as the head, transverse; abdomen oval, pitchy-black, sutural margin of each segment paler; legs deep chestnut; femora thick, the anterior pair rotundate on the superior margin. Length $\frac{1}{2}$.

I have seen only one specimen of this species, which I found on the Black-headed Gull (Larus ridibundus).

16. Menopon icterum? (Louse of the Dunlin and Woodcock.)

Plate XX. Fig. 8.

Fulvous, smooth, and shining; head without spots; prothorax with a cruciform depression in the centre; abdomen with chestnut bands.

Menopon icterum? Burmeister Handbuch ii. pt. ii. p. 440. spe. 8.?

Head semilunar, concave in the centre; eyes prominent and black; prothorax nearly as wide as the head, semicircular, with a depressed marginal line, and a cruciform depression in the centre; mesothorax small, transverse; metathorax as wide as the head, sub-conical, base somewhat concave; abdomen obtusely ovate, chestnut, sutures pale, fulvous and pubescent; legs fulvous, rather short; femora thick, more especially those of the second and third pair. Length $\frac{1}{2}$.

I have ventured to quote Dr. Burmeister's name of *icterum* for this insect, though not without some misgivings as to the identity of the two. Dr. Burmeister gives the Woodcock (Scolopax rusticolor) as the nidus of his insect. I took mine from the Sanderling (Tringa variabilis); this discrepancy, however, I consider of little consequence, as we find so many species, which are common to two or more species of birds.

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17. Menopon carduelis.—*Denny.* (Louse of the Goldfinch.)

Plate XX. Fig. 7.

Pale fuscous; head with a pitchy spot on each side; prothorax deep, fuscous, with a transverse line in front, terminating in two punctures.

Head rotundate, trigonate, vertex depressed, lateral margin slightly sinuated with a pitchy spot before each eye;

eyes black; prothorax nearly as wide as the head, semicircular, with two lateral depressions, and a transverse line in front, terminating on each side in a puncture; metathorax the width of the head, short, transverse, posterior margin rotundate, and slightly reflexed; abdomen large, somewhat orbicular, pale fuscous, with obscure bands, rather darker on the sides; legs fuscous, anterior femora enlarged. Length ½.

I once found this species in tolerable plenty on a Goldfinch (Fringilla carduelis).

Professors Nitzsch and Burmeister enumerate the following species, which I have not been fortunate enough to obtain in order to figure.

1. MENOPON STRAMINEUM (Meleagris gallopavo). Germ. Mag. vol. iii. p. 300.—Pediculus Meleagridis. Panz. Faun. Ins. Germ. 51. fig. 20.
2. MENOPON CUCULLARE (Sturnus vulgaris). Testaceum capite, lunula utrinque temporali punctisque duobus clypei fuscis. Long. ½—¾.—Menopon cucullare. Nitzsch. Germ. Mag. iii. p. 300.—Menopon cucullare. Burmeister Handbuch ii. pt. ii. p. 439.—Pediculus Sturni candidi. Redi. Exp. tab. 17. fig. sup. ♂.
3. MENOPON MINUTUM (Passerum Linn. plur.). Germ. Mag. iii. p. 300.—Pediculus curruca. Schrank. Beitr. tab. v. fig. 1.
4. MENOPON PHANEROSTIGMATON (Cuculus canorus). Germ. Mag. iii. p. 300.—Pediculus fasciatus. Scopoli Ent. Carniolica.
5. MENOPON TRIDENS (Fulica atra). Burmeister Handbuch ii. pt. ii. p. 440. Fusco-testaceum, capite pedibus incisurisque segmentorum pallidis; stria occipitis punctoque genarum utrinque nigris; clypeo maculis 3-fuscis. Long. ⅔.
6. MENOPON GONOPHAEUM (Corvus corax). Burmeister Handbuch ii. pt. ii. p. 440. Pallide-testaceum, fusco-fasciatum; capite macula elliptica genarum, punctisque 4-clypei nigris. Long. 1.
7. MENOPON LUTESCENS (Totanus maculatus. Tringa pugnax, Alca torda). Pallidum, fasciis fulvo-testaceis; capite punctis 5-obsoletis fulvis. Long. ¾. Burmeister Handbuch ii. pt. ii. p. 440.
8. MENOPON LEUCOXANTHUM (Anas crecca). Burmeister Handbuch ii. pt. ii. p. 440. Testaceum, incisuris pallidioribus; capite hemisphærico, signaturis 5-fulvis. Long. ⅔.

Sub-Genus III. NITZSCHIA.*—(*Denny.*)

Nitzschia, *Denny's MS.* Menopon, *Nitzsch.*

SUB-GENERIC CHARACTER.

Head oblong triangular, orbital margin sinuated; *maxillary palpi* large and prominent; *antennæ* capitate, nearly concealed; *prothorax* narrow; *mesothorax* large, very distinct; *abdomen* oblong; *tarsi* with large involute pulvilli.

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1. Nitzschia burmeisteri.—*Denny.* (Louse of the Common Swift.)

Plate XXII. Fig. 5.

Oblong, wholly of a dark chestnut, smooth and shining; head with a deep concavity in the centre; mesothorax transverse; abdomen depressed, posterior tibia notched.

Menopon pulicare. Nitzsch. MSS.

Head rather small, oblong triangular, lateral margin doubly sinuated on each side, vertex with a deep oblong concavity, occiput produced, with a depressed line on each side extending to the clypeus; eyes large and prominent; antennæ nearly concealed in the cavity of the temporal margin, capitate, the last joint large and ovate; prothorax much narrower than the head, rotundate quadrate, with a line in the centre; mesothorax the width of the head, transverse, convex, anteriorly deeply sinuate, posterior margin much produced in the centre, sub-angular; metathorax very large, sub-quadrate, widest behind, centre depressed; abdomen elongate, clavate, flat, suture of each segment

* In honour of the late Dr. C. L. Nitzsch, Professor of Natural History, and Director of the Zoological department in the University of Halle, whose labours laid the foundation for a thorough investigation of the Pediculidæ and Nirmidæ. He was a minute and accurate observer of nature, and successful cultivator of several branches of science, but more especially Entomology and Ornithology. He died August 16th, 1838.

densely fringed with stiff hairs; legs pale chestnut, the anterior pair shorter than the following; femora large, nearly orbicular, convolute; tibiæ short and thick, posterior pair longest, femora oblong, the inferior margin reflexed; tibiæ curved and notched; tarsi long, the first joint short, the second very long, with a prominent involute pulvillus; ungues large, sinuated near the apex, slightly curved. Length 1—1¼.

Infests the Common Swift (Cypselus apus). Buffon in his History of Birds alludes to this insect, when describing the Swift, but without giving it any particular designation. Professor Otto, however, in his Translation of the above work, has minutely described it, as I am informed. Nitzsch had attached the MS. name of *Pulicare* to this species, and placed it in his Sub-genus *Menopon*, from which I have ventured to remove it, as I feel convinced he would not long have allowed it himself to remain in a group, from which it differed in several particulars. Many of its characters approach much nearer to *Trinoton*, and in general appearance there is a strong resemblance to *Laemobothrion*. In raising it to the rank of a Sub-genus, I feel proud in thus being able to add my mead of gratitude to departed worth, by attaching to it the name of the late distinguished Professor of Natural History in the University of Halle, and while paying posthumous honour to one individual, I have equal gratification in marking my admiration of the labours of his successor, Dr. Burmeister, one of the most zealous and able Entomologists of Germany. Should I be accused of bad taste in deriving both *generic* and *specific* names from those of individuals, I shall not attempt to exculpate myself, but point to the *Rafflesia Arnoldi*, by which (had there been no other means) the names of two lamented cultivators of science are rescued from oblivion.*

* This gigantic flower, or Vegetable Titan, as it has been called, was discovered in 1818, when Sir Stamford Raffles, then Governor of Sumatra,

Sub-Genus IV. TRINOTON.—*(Nitzsch.)*

Trinotum, *Burmeister.*

SUB-GENERIC CHARACTER.

Head nearly triangular, temporal magin deeply sinuated; *eyes* large and prominent, divided by a narrow ridge of the orbital margin; *antennæ* nearly concealed in a cavity of the temporal margin, the first joint large and cylindrical, second small, third transverse, fourth ovate, terminated by a bristle; *prothorax* obcordate; mesothorax large, transverse; *metathorax* large, quadrate; *legs* thick, tibiæ clavate, obliquely notched in front to receive the tarsus, which is short and robust, and furnished with two large involute pulvilli.

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1. Trinoton conspurcatum. (Louse of the Goose and Swan.)

Plate XXII. Fig. 1.

Elongate; head transversely triangular, pitchy chestnut, shining and pubescent, margin pale fulvous; abdomen somewhat convex, abdominal bands nearly black on the sides and bifurcate; sutures pale; femora with a black annulus at the apex.

Trinoton conspurcatum. Nitzsch. Germ. Mag. iii. p. 300. Steph. Cat. pt. ii. p. 334. Trinotum conspurcatum. Burmeister Handbuch ii. pt. ii. p. 440. Pediculus anseris. Sulzer Gesch. d. Ins. tab. 29. fig. 4.

Head transversely triangular, temporal lobes much produced, yellowish-white, with a black uncinate mark from

made his first excursion from Bencoolen into the interior of the island. In that journey he was accompanied by a Naturalist of great zeal and acquirements, the late Dr. Joseph Arnold, F.L.S. from whose researches in a field so favourably situated, and so imperfectly traversed as Sumatra, the greatest expectations had been formed. But these expectations were never to be realized, for the same letter which gave us the first account of the gigantic flower, brought also the intelligence of Dr. Arnold's death.—*See Linn. Trans.* vol. xiii.

the occiput to the eyes; clypeus pale, with a somewhat bilobed whitish spot on each side, margined with black, base with a row of deep punctures; eyes large, pale fuscous; prothorax somewhat obcordate, with a pale reflexed lateral margin three-fourths of its length, fringed with strong bristles, centre channelled, anterior part with a transverse impressed line, and four punctures, base rotundate and retuse, lateral margin with a pitchy-black fascia; mesothorax transverse, punctured, basal margin rotundate and pale fulvous, lateral margin slightly sinuated, pitchy; metathorax large, punctured on the sides, angles obtuse, basal margin broad, pale fulvous, with a pitchy-black band extending diagonally across the humeral portion, centre channelled; abdomen large, ovate, convex, depressed in the centre, lateral margin and sutures pale, each segment, excepting the last two, with a dark pitchy dorsal band, terminating in a pitchy-black bifurcation on each side; legs strong and hairy, the superior margin with an annulus at the apex of the femora, pitchy black, the anterior femora nearly orbicular, curved backward, the margin inflected, posterior femora sub-dentate inferiorly; tibiæ densely fringed with long hairs. Length 3 lines.

This species, which is one of the largest of the Family inhabiting this country, is a very common parasite on the Domestic Goose, and may frequently be seen running on that bird with great velocity, either in a progressive or retrograde direction, and owing to its polished and somewhat flat surface is difficult to retain when caught. I have never found it on any other than the Domestic Goose, but Mr. Thompson sent me specimens taken on the Larus Canus and Cygnus Bewickii, and Dr. Burmeister mentions the Tame Swan (Cygnus Olor). I have no doubt of this being the T. Conspurcatum of Nitzsch, though it appears to be larger than the German specimens.

2. Trinoton luridum. (Louse of the Duck and Merganser.)

Plate XXII. Fig. 2.

Chestnut, shining and pubescent; head obtusely triangular; clypeus with two black fasciæ on each side; abdomen cylindrical, flat, with transverse bifurcated bands like the preceding, but more distinct; legs very thick.

Trinoton luridum. Nitzsch. Germ. Mag. iii. p. 300. Steph. Cat. pt. ii. p. 334.—Trinitum luridum. Burmeister Handbuch ii. pt. ii. 441.—Louse of the Teal. Redi. Expe. pl. xii. Albin. Aran. pl. 46.

Head pale chestnut, obtusely triangular, base somewhat trilobate; clypeus with two short oblique black fasciæ which sometime coalesce, a broad uncinate band from the orbits to the occiput united at the base, vertex concave, temporal region pale exteriorly; prothorax obcordate, the anterior and lateral reflexed margin pale yellow-white, a black sub-lobate fascia on each side, centre with a depressed line and slightly rugulose; mesothorax with the lateral angles produced, base fulvous; metathorax with the basal margin and a longitudinal space in the centre fulvous, and a black transverse basal and humeral fascia finely punctured; abdomen cylindrical, pubescent, much flattened, depressed down the centre, sutural and lateral margins fulvous, transverse bands chestnut, terminating in a black bifurcation on each side; legs fulvous, very thick, the superior margin pitchy; tibiæ flat, with numerous long hairs. Length 2 lines.

This insect approaches very near to the preceding, so much so that it is difficult in a description to make the specific distinction appear evident. When the two species however are viewed together, the distinction is very manifest; the uniform difference in size is perhaps the most striking, though the greater breadth of the head, more obscure colour, ovate abdomen, and greater convexity of the

T. *Conspurcatum*, are all good and characteristic marks. In addition to the above, I have never found the latter species either on a Duck or Merganser, nor this species upon Swan or Goose. Mr. Thompson has sent me specimens taken on the Wigeon (Mareca Penelope) and Golden-Eye (Clangula chrysophthalmos), from Belfast; Mr. Wallace took it on the Pintail (Anas acuta) in the Isle of Man, and my brother on the Teal (Anas crecca), the Goosander (Mergus merganser), and the Smew (Mergus albellus), in Norwich, and I believe Mr. Jenyns has found specimens on the Red-breasted Merganser (Mergus serrator). From the circumstance of its being found on three of our species of Mergus, I should have considered it as the T. *lituratum* of Nitzsch, which he says infests the Smew, but the specific character as laid down by Dr. Burmeister would not warrant such a conclusion.

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3. Trinoton squalidum.—*Denny*. (Louse of the Goose.)

Plate XXII. Fig. 3.

Pale yellowish-grey, shining and smooth; head with four black spots on the lateral margin; thorax with black fasciæ; femora with a black annulus at the apex; abdomen ovate.

Head triangular, pale fulvous, with two semilunar black spots on each side, bordered with chestnut, vertex concave, base very broad and concave, with a transverse black fascia; eyes large; antennæ obscure; prothorax large, nearly as wide as the head, much contracted posteriorly, a black band down each lateral margin; mesothorax large, lateral angles much produced and acute, posteriorly truncate, a black transverse band in the centre, and two short ones on the anterior margin; metathorax transverse, with a small black spot in the centre of the lateral margin, which

is slightly sinuated, posterior margin rotundate, fringed with long hairs; abdomen ovate, lateral margin reflexed, with a narrow fulvous border; legs very thick, greyish-yellow; apex of the femora with a black annulus, anterior femora very large and rotund; tibiæ fringed with long hairs. Length 1½.

The Rev. L. Jenyns sent me this species taken from the White-fronted Goose (Anser albifrons). I have found one specimen on the Domestic Goose, and received another from my brother, taken on a Shoveller (Anas clypeata).

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4. Trinoton lituratum. (Louse of the Smew.)

Brevius latiusque, pallidum, signaturis fuscis obsoletis; pedibus gracilioribus, longioribusque. Long. 1½.

Trinoton lituratum. Nitzsch. Germ. Mag. iii. p. 300. Steph. Cat. pt. iii. p. 334.—Trinotum lituratum. Burmeister Handbuch ii. pt. ii. 441.—Ricinus Lari. De Geer, Mem. vii. pl. 4. fig. 12.?

I introduce this species although I have never seen an example, but as it is the parasite of a British bird, there is no doubt but that it will occur, if it is not already in some private collection?

Sub-Genus V. EUREUM.—*(Nitzsch.)*

SUB-GENERIC CHARACTER.

Head very broad, transverse, temporal region small, with a foveola on each side, but not apparently to interrupt the continuity of the lateral margin; *antennæ* concealed, if any? *mesothorax* small, sometimes absent; *abdomen* broad.

The species of this sub-genus are few in number, but generally large, and infest the Hirundinidæ.

1. Eureum cimicoides. (Louse of the Swift.)

Plate XXII. Fig. 4.

Fulvous-chestnut, shining and pubescent; abdomen broad, nearly orbicular; occiput tuberculate on each side.

Eureum cimicoides. Nitzsch. Germ. Mag. iii. p. 301. Steph. Cat. pt. ii. p. 335. Burmeister Handbuch ii. pt. ii. 441.—Nirmus truncatus. Olfers. 91?

Head very broad, transverse, anterior margin sub-angular, a large oblong foveola on each side before the eyes, bordered by a dense row of hairs, temporal lobes rotundate, convex, and prominent; occiput concave, terminating on each side in an acute projection; eyes oblong? maxillary palpi long and thick, the second joint the largest, and sub-rotundate, third short, fourth long and cylindrical; prothorax about half the width of the head, quadrate, lateral and basal margins concave, with three longitudinal depressed lines, united by a transverse one in the centre, anterior margin with two short stiff spines on each side near the head; mesothorax narrow, posteriorly rotundate; metathorax transverse, lateral margin oblique, angles acute, base rotundate; abdomen very broad and flat, nearly orbicular, segments nearly equal, sutural margin delicately striated and produced in the centre, lateral margin serrulate, the angles of each segment produced, acute, and terminated by a small tuft of long hairs; legs long and thick, the anterior pair close to the head, and shorter than the remainder, so as to be nearly hid beneath the former; femora short sub-rotundate, posterior pair very long, femora sub-cylindrical; tibiæ thick, terminating at an oblique angle, superior margin with a row of long bristles. Length $1\frac{3}{4}$.

A more expressive name than Cimicoides could not have been given to this insect, which bears so striking a resemblance in colour and general appearance to the Cimex lectularius, that no one could long remain in doubt who had

found this species, which it was. The species appears scarce, and though I have sought for it upon several specimens of the Swift (Cypselus apus), yet never succeeded in capturing a single individual, nor have I seen it in any collection to which I have had access; my two examples were taken in Norfolk upon the Swift, and forwarded by my brother.

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2. Eureum malleus. (Louse of the Swallow.)

Latum concolor subfuscum, oculis nigris, capite maximo pronotaque minori semilunatis, brevissimis. Long. $\frac{3}{4}$.

Eureum malleus. Nitzsch. Germ. Mag. iii. p. 301. Steph. Cat. pt. ii. p. 335. Burmeister Handbuch ii. pt. ii. p. 441.

From the great rarity of this species, I have been unable to obtain a figure of it, therefore insert Dr. Burmeister's specific character, for which I conceive no apology is necessary. As in every instance where a species is recorded as a parasite of a bird which belongs to the British Fauna, but which fifteen years' search has hitherto failed to discover, I consider it more justifiable to insert the description of another author, than to leave it out of my enumeration, when there cannot be a question but it is belonging to our island.

Sub-Genus VI. LAEMOBOTHRIUM.—*(Nitzsch.)*

SUB-GENERIC CHARACTER.

Head oblong, sinuated in front, temporal lobes small, produced into angular projections backwards; *antennæ* always concealed, if any? *throat* concave; *mesothorax* none; *metathorax* continuous with the abdomen; *abdomen* of *nine* segments?

Infests the Genera Falco, Vultur, Struthio, Fulica, and

Ardea; all the species are large and scarce. Only a single British example has come under my notice. Nitzsch states the number of segments in the abdomen is *ten*, I can discover only *nine*, either in this species, or L. glutinans from Cathartes papa, which are the only two I have had the opportunity to examine.

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1. LAEMOBOTHRIUM LATICOLLE. (Louse of the Hobby.)

Plate XXIII. Fig. 4.

Obscure fulvous, smooth, shining and pubescent; head with a large sub-triangular black spot on each side, lateral margin of the abdomen, and superior margin of the legs black.

Laemobothrium laticolle. Nitzsch. MSS.

Head large, oblong, sub-lobate anteriorly, fulvous-yellow; clypeus produced and truncate, lateral margin with a large black angular patch, extending from the clypeus beyond the orbital sinus, with a rotundate fulvous spot in the centre, a narrow black band across the occiput; eyes prominent; prothorax nearly as wide as the head, rotundate, quadrate, lateral margin with a deep black sinus anteriorly, a longitudinal depression in the centre, and one on each side connected by a transverse line at the base, which is concave, the angles produced; metathorax with a depressed line on each side, lateral margin continuous with that of the abdomen and pitchy black, truncate behind; abdomen elongate, ovate, obscure chestnut down the centre; legs pale fulvous, the superior and half the inferior margin of the femora pitchy black, the anterior pair short, posterior large, the femora very long, conical; tibiæ clavate, first joint of the tarsi short and thick, last long and slender. Length 3½.

Communicated by the Rev. L. Jenyns from the Hobby (Falco subbuteo).

The following species infesting birds not uncommon in Britain, are enumerated by Nitzsch and Burmeister, two of which are included in Mr. Stephens's Systematic Catalogue of British Insects.

2. LAEMOBOTHRIUM GIGANTEUM. (Louse of the Moor Harrier, and Buzzard.) Fulvo-testaceum, abdominis disco dilutiori; capite maculis 3-nigris una trigona verticali, reliquis duobus transversis occipitalibus. Long. $3\frac{2}{3}$.

Laemobothrium giganteum. Nitzsch. Germ. Mag. iii. p. 301. Steph. Cat. pt. ii. p. 334. Burmeister Handbuch ii. pt. ii. p. 441.—Pediculus maximus. Scop. Ent. Carniol. 382. 1036.—Pediculus Buteonis. Fabr. Syst. Antliat. 343. 17. Spec. Insect. ii. 478. 13. Gen. Inst. Mant. 309. Stew. Elemt. ii. 298. Turt. iii. 696.—Pediculus circi. Geoff. Hist. abre. ii. pl. 20. fig. 1.

"Fuscescens, caput, subcordatum, antice truncatum, postice in medio macula fusco; ferruginea antice ad apicem punctatis duobus fuscis; thorax subrotundatus, lævis, lineis tribus fuscis longitudinalibus media ad marginem, posticum non protensa; abdomen lanceolatum marginatum, margine obscuriore, punctis, duobus impressis, prope, marginem in singulis segmentis."—(*Scopoli.*) Hab. Aquila albicilla. Buteo vulgaris, et Circus æruginosus.

3. LAEMOBOTHRIUM HASTICEPS. (Louse of the Kestril.) "Pallidum, clypeo thoraceque fuscis; pronoto punctis 2-posticis pallidis. Long. $2\frac{1}{2}$."—(*Burmeister.*)

Laemobothrium hasticeps. Nitzsch. Germ. Mag. iii. p. 302. Steph. Cat. pt. ii. p. 334.—Laemobothrium hastipes. Burmeister Handbuch ii. pt. ii. p. 442.—Nirmus hasticeps. Olfers. 87.— Pediculus Tinnunculi. Linn. Syst. Nat. ii. 1018. 13. Faun. Suecic. 1949. Fabr. Syst. Ent. ii. p. 806. 11. Spec. Insect. ii. 478. 12. Mant. Inst. ii. 369. 13. Frisch. Insect. ii. xxiv. t. 24. Panz. Faun. Germ. 51. fig. 17. Goeze. Faun. cur iv. 192. Stew. Elemt. ii. 298. Turt. iii. 696.—The Louse of the Kestril. Redi. Exper. tab. 13. Albin. Aran. pl. 50. Hab. Falco tinnunculus.

4. LAEMOBOTHRIUM ATRUM. (Louse of the Coot.) "Atrum opacum, pedibus piceis. Long. 2."—(*Burmeister.*)

Laemobothrium atrum. Nitzsch. Germ. Mag. iii. p. 302. Steph. Cat. pt. ii. p. 335.—Laemobothrium nigrum. Burmeister Handbuch ii. pt. ii. p. 442.—Pulex Fulicæ. Redi. Exper. tab. iv. fig. 1.—The Louse of the Coot. Albin. Aran. pl. 44. fig. inf. Fabr. S. Antl. 347. 42. Hab. Fulica atra.

5. LAEMOBOTHRIUM GILVUM. (Louse of the Bittern.) "Pale fulvous;

head with four black spots, and two on the anterior part of the mesothorax; femora with a fuscous line."—(*Burmeister.*) Hab. Ardea Stellaris.

One specimen in the collection of the late Professor Nitzsch in the University of Halle.

Sub-Genus VII. PHYSOSTOMUM. (Nitzsch.)

Burmeister, Stephens, Children.

SUB-GENERIC CHARACTER.

Head oblong, temporal lobes small, not prominent, angulated behind; *antennæ* concealed, if any?; *labrum* horny, excavated below; *throat* prominent; *mesothorax* none; *metathorax* continuous, with the abdomen, and marginate; *abdomen* oblong, of nine segments?

All the species in this sub-genus are large, and I do not think well defined, from the fact, that although I possess specimens from six species of birds, only two of that number I dare venture to give as species, and of one of these I have doubts, whether my synonym is correct.

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1. Physostomum mystax. (Louse of the Fieldfare and Ring Ousel.)

Plate XXIII. Fig. 6.

Pale testaceous; head and thorax the darkest, very smooth and shining; lateral margin of the metathorax and abdomen pitchy, occipital processes short, rather acute.

Physostomum mystax? Burmeister Handbuch ii. pt. ii. p. 442.

Head oblong, conical; clypeus narrow and rotundate, with a slight tubercle on each side, vertex concave; occiput with an angular process in the centre, and two depressed lines passing to the lateral margin, temporal processes somewhat acute and prominent; eyes semilunar, passing below

the lateral margin; prothorax subquadrate, lateral margin rotundate, with a small papilla on each side anteriorly, base concave and depressed; metathorax large and sub-conical; abdomen claviform, depressed, with a prominent pitchy-brown margin; legs pale, fulvous yellow; femora thick, the posterior pair long and elliptical; tarsi short, the first joint with an involute pulvillus. Length 2.

The first specimens of this species, which I had an opportunity of examining, were forwarded by P. J. Selby, Esq. from the Fieldfare (Turdus pilaris), since which I have seen other specimens from the Ring Ousel (Turdus torquatus). I have also a specimen from the Chaffinch (Fringilla Cœlebs), which differs in no respects, except in being little more than one line in length; and another like the last from the Lesser Spotted Woodpecker (Picus minor).

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2. Physostomum bombycillæ.—*Denny.* (Louse of the Bohemian Wax-Wing.)

Plate XXIII. Fig. 5.

Pale testaceous, smooth and shining; head wider than the prothorax; clypeus broad; legs short and thick.

Head oblong, sub-conical; clypeus broad and rotundate, vertex concave, lateral margin depressed before the eyes, occiput rotundate, temporal angles short, but prominent; eyes like the preceding; prothorax quadrate, rather narrower than the head, lateral margin slightly rotundate, base sub-concave, the angles broad and ciliated, with stiff hairs, anterior margin with two small foveolæ; metathorax transverse, strongly marginate; abdomen sub-cylindrical, deeply marginate, the dorsal space rather darker; legs short and thick. Length 1.

This species was obtained from a specimen of the Bombycilla garrula, which was shot near Leeds. I have one also

taken from the Snow Bunting (Emberiza nivalis), and should have considered these two as the *P. irascens*, being, however, without the ferruginous margin to the abdomen, I felt I was not justified in adopting that name. But as I have said elsewhere, it is my wish that the specific names, which I attach, be considered as provisional only, as hereafter some may eventually prove varieties. Therefore, if the insects now alluded to should be considered by Dr. Burmeister as varieties of his *P. irascens*, I bow with submission to his judgment. I have in my possession two specimens of the same size, but white, with the head pale testaceous, which were found on the Blue Titmouse (Parus cœruleus); but as these may owe their paleness to having recently changed their skin, I would not venture to describe them, until more specimens occur of the same character. It may not be out of place here to remark, that I think this sub-genus, and the preceding *Laemobothrium*, which agree in some respects, ought to be removed from the genus *Liotheum*, as they differ considerably in general appearance from the remaining sub-genera; and further, the *number* of segments in the abdomen is not the same. These two having but nine, while the others have ten; which number is in accordance with the generic character, as laid down by the late Professor Nitzsch. I make this assertion with great deference to the opinion of the author just named, and not out of any captious spirit to lessen the well-earned fame of so able and indefatigable a naturalist. As, however, my task compelled me to figure the species, I could not insert a greater number of segments than I had been able to observe myself, and therefore felt I was called upon to state why I had so represented these two Sub-Genera.

The following species are enumerated by Nitzsch and Burmeister.

3. PHYSOSTOMUM IRASCENS. (Louse of the Chaffinch.)—"Pallide testaceum, margine abdominis externo ferrugineo; occipite utrinque acutissimo, longissimo." Long. 1. (*Burmeister.*)

Physostomum irascens. Nitzsch. Germ. Mag. iii. p. 302. Step. Cat. pt. ii. p. 335. Burmeister Handbuch ii. pt. ii. p. 442.—Pediculus Motacilla. Fabr. Syst. Antl. 349? Stew. Elem. ii. p. 300.?

4. PHYSOSTOMUM FRENATUM. (Louse of the Wren.)—Album, capitis pronotique stria intramarginali, abdominisque margine-nigris. Long. 1¼. Physostomum frenatum. Burmeister Handbuch ii. pt. ii. p. 442.

5. PHYSOSTOMUM SULPHUREUM. (Louse of the Golden Oriole!)—"Sulphureum, capite biplagiato, margine omni linea intramarginali nigra. Long. 1½. (*Burmeister*).

Physostomum sulphureum. Nitzsch. Germ. Mag. iii. p. 302. Burmeister Handbuch ii. pt. ii. p. 442. Children in Back's Land. Expe. Appendix, 539.—Pediculus dolichocephalus. Scopol. Ent. Carniol. 382. n. 1039. Pediculus Orioli. Fabr. Gen. Insect. 309. Syst. Inst. ii. 479. 19.

6. PHYSOSTOMUM NITIDISSIMUM. (Louse of the Yellow Bunting.)

Physostomum nitidissimum. Nitzsch. Germ. Mag. iii. p. 302. Step. Cat. pt. ii. p. 335.—Nirmus pterocephalus. Olfers. 91.—Ricinus Fringillæ. De Geer. Inst. vii. tab. 4. fig. 6.

GENUS II. GYROPUS. (Nitzsch.)

Gyropus. Burmeister.—*Pediculus.* Linnæus. Schrank. Fabricius. Olfers.

GENERIC CHARACTER.

HEAD depressed, scale-like, horizontal, frontal and temporal margin deeply sinuated, mouth anterior.

MANDIBLES without teeth.

MAXILLÆ obscure.

LABRUM and LABIUM produced, trapezoidal, entire.

MAXILLARY PALPI long, produced, rigid, conical, and 4-jointed.

LABIAL PALPI none.

Antennæ four-jointed, capitate, last joint very large.
Eyes inconspicuous or absent?
Thorax of two segments.
Abdomen with ten segments.
Tarsi two-jointed, ungues single, those on the two posterior pair of legs sometimes very large and curved towards the base of the femur.
Stomach symmetrical, somewhat unilateral.
Liver with four free lobes equal in length and breadth.
Food minute particles of epidermis? perhaps also hair?
Coitus exercetur femina mari submissa.

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1. Gyropus ovalis. (Louse of the Guinea Pig.)

Plate XXIV. Fig. 1.

Pale yellow-white; head and thorax bright ferruginous, the former transverse, temporal lobes produced; abdomen large, nearly orbicular; legs thick, the two posterior pair curved; ungues long, curved, and strong.

Gyropus ovalis. Nitzsch. Germ. Mag. iii. p. 304. Burmeister Handbuch ii. pt. ii. p. 443.

Head broad, transverse, the clypeus trilobate and rotundate, temporal margin with a large deep sinus on each side, base much produced, occiput concave; antennæ upon the anterior part of the lateral margin very prominent, the first joint short and cylindrical, second cup-shaped, third large, rotundate, trigonate, fourth very large and securiform; prothorax transversely oval, with a depressed transverse line near the centre; metathorax large, sub-conical, base sub-truncate; abdomen pale yellow-white, lateral margin and apex slightly ferruginous, nearly orbicular, male with the apex somewhat acute, female with the apex truncate, the first seven segments with the sides dusky; sutures densely ciliated with hairs; legs pale ferruginous-yellow, thick and strong, the

anterior tibia abruptly clavate; tarsus long, conical; ungues short, the four posterior in the male with the tibiæ curved, the superior margin involute at the apex, having the appearance of being twisted; tarsi very small; ungues long, cylindrical, thick and curved towards the femur, so as to act as a claw. Length $\frac{1}{4}$.

Communicated by Francis Billam, Esq. of Newall Hall, near Otley, and William Milner, Esq. of Rochdale. Although the Guinea Pig (Cavia Cobaya), is said to be much infested with this parasite, I found it extremely difficult to obtain any specimens to describe.

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2. Gyropus gracilis. (Louse of the Guinea Pig.)

Plate XXIV. Fig. 2.

Elongate, pale fulvous-yellow, finely pubescent; head and thorax darker, segments of the abdomen with transverse striated fascia at the sutures; tarsi and ungues very short and minute.

Gyropus gracilis. Nitzsch. Germ. Mag. iii. p. 304. Burmeister Handbuch ii. pt. ii. p. 443.—Pediculus Porcelli. Schrank. En. Inst. Aust. 500. tab. i. fig. i.

Head exserted, sub-ovate, depressed, and granulate, labrum much produced; clypeus trilobate, marginate, temporal margin deeply sinuated, basal lobes acute; occiput truncate; antennæ upon the anterior margin large and prominent, the last joint very large and sub-globose; prothorax quadrate, produced anteriorly, forming a neck, with one longitudinal aud two transverse impressed lines, convex; metathorax sub-conical, with a narrow transverse fascia anteriorly, base concave; abdomen elongate, cylindrical, finely granulose, the sutural margin of each segment with a transverse striated fascia; apex in the male with two spinulose papillæ, in the female with four; legs short and thick, ful-

vous, the anterior pair the longest; tibiæ clavate; tarsi and ungues very short and minute. Length $\frac{1}{3}$.

Communicated also by Francis Billam, Esq. This species is easily overlooked from its minuteness and the slender form of its body, which gives the Insect no unapt resemblance to a small particle of straw. Were it not for the fear of being accused of a fondness for innovation, I should have proposed the establishment of a new Sub-genus, *Micropus*, for this species, which differs so very materially from the preceding, not only in the structure of the antennæ, which is greater than in any other instance with which I am acquainted, between two species of the same genus, but also in the character of the tibia and tarsi, the former of which in the *Gyropus Ovalis* has a peculiar twisted appearance, which in this is flat and broad. The ungues in the former species is very large and striking, while in the one under consideration, it is so minute as scarcely to be visible without a close investigation.

"These wait all upon thee that thou mayest give *them* their meat in due season.

That thou givest them they gather, thou openest thine hand they are filled with good.

Thou hidest thy face, they are troubled, thou takest away their breath, they die and return to their dust.

Thou sendest forth thy spirit, they are created, and thou renewest the face of the earth.

O Lord, how manifold are thy works! in wisdom hast thou made them all."—PSALM CIV.

Having brought my labours to a close, and illustrated all the species which the most diligent search enabled me to obtain examples of, I may observe, in the elegant and expressive language of a modern writer,* "These miniature organizations are not however beneath our notice; for they have one great value, which will always make them interesting to us. They contribute much to amplify and rectify our ideas of the Sovereign Creator, who cannot but display to us His mind in His works. He illustrates His own nature by His creations; The whole presents a delineation of Himself. Now the marvellous immensity and multiplicity of the universe which He has made and governs, present to the thoughtful mind such a tremendous Deity, that we cannot but dread, lest greatness so fearfully vast, should have no community of feeling with us, and should not condescend to maintain any kind relations towards us, or with the earth our abode, which is so inconsiderable a portion of general nature. I have experienced something of this sort, and I know that others have painfully felt it. It is, therefore, delightful to see by these miniature existences, small almost to invisibility, and by their careful organization as finely contrived as in the grandest creature, that greatness and littleness make no difference to Him in His Creation or His Providence. They reveal to us that magnitude is nothing in His sight; that He is pleased to frame and to regard the small and weak, as benignly and as attentively as the mighty and the massive. Improved reason indeed makes the same deduction, because when it justly reflects, it feels that the grandest creature can be but insignificance before such an Infinite Creator. We are high and low, great and small as to each other, but not to Him. The ant is as full of life and comfort, and curious instincts, and as skilfully organized as the lion or the whale. It is a

* Sharon Turner.

marvellous property of the incomprehensible nature of our God, that He delights in all His creatures. By having made some classes of organized beings wondrously small, He proves in their fabrication and subsistence, to every order of nature, that no part of it has existed without His thought, nor is too petty for His notice, nor unworthy of His care. Whatever He has made that we deem as nothing in comparison with ourselves, are yet in this view heralds of comfort and confidence to us; for the inference becomes irresistible—indeed it has been made for us by the greatest of all authorities—that if He can make and regard such inconsiderable organizations of nature, He will never be indifferent or inattentive to us. This was the principle of that exhilarating assurance—pregnant with comfort to the humblest tenant of humanity—because unconfinable in its application,"—

"Are not two sparrows sold for a farthing? Fear not: Ye are of more value than many sparrows."

(*Note to page* 15, *line* 8.)

In an account of the wreck of the Wager, in May, 1741, and subsequent sufferings of the crew, the narrative proceeds to give an instance of the rapid increase of Pediculi when aided by disease and filth.

"About the middle of March, 1742, they again embarked on their wretched voyage, and shortly after, Mr. Elliot the Surgeon died, being miserably starved to death; and, indeed, from the deplorable state to which the survivors were reduced, they all bid fair to follow, and to add to their distress, they were so swarming with vermin that it was impossible to rest.

"But we were clean in comparison to Captain Cheap, for I could compare his body to nothing but an ant-hill, with thousands of the Insects crawling over it; for he was now past attempting to rid himself in the least of this torment, as he had quite lost himself, not recollecting our names that were about him, or even his own."

United Service Mag. No. clix. p. 169, 1842.

EXPLANATION OF THE PLATES.

PLATE I. fig. 1. Docophorus Cygni, 1 *a*, antennæ; 1 *b*, anterior leg; 1 *c*, posterior leg.
——— fig. 2. Docophorus fusiformis, 2 *a*, antennæ.
——— fig. 3. Docophorus ceblebrachys, 3 *a*, antennæ; 3 *b*, posterior leg; 3 *c*, anterior leg.
——— fig. 4. Docophorus latifrons, 4 *a*, anterior leg; 4 *b*, antennæ.
——— fig. 5. Docophorus semisignatus, 5 *a*, antennæ; 5 *b*, anterior leg; 5 *c*, posterior leg.
——— fig. 6. Docophorus biseriatis, 6 *a*, antennæ; 6 *b*, posterior leg; 6 *c*, anterior leg.
——— fig. 7. Docophorus fuscicollis, 7 *a*, antennæ.
——— fig. 8. Docophorus pallescens, 8 *a*, antennæ.
——— fig. 9. Docophorus Picæ, 9 *a*, antennæ.
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——— fig. 2. Docophorus Rubeculæ, 2 *a*, antennæ; 2 *b*, posterior leg; 2 *c*, anterior leg.
——— fig. 3. Docophorus Chrysopthalmi, 3 *a*, antennæ; 3 *b*, anterior leg.
——— fig. 4. Docophorus rostratus, 4 *a*, antennæ; 4 *b*, 4 *c*, posterior leg; 4 *d*, anterior leg.
——— fig. 5. Docophorus Platygaster, 5 *a*, antennæ; 5 *b*, anterior leg.
——— fig. 6. Docophorus Thalassidromæ.
——— fig. 7. Docophorus Aquilinus, 7 *a*, antennæ.
——— fig. 8. Docophorus cephalus, 8 *a*, antennæ; 8 *b*, anterior leg.
——— fig. 9. Docophorus fulvus, 9 *a*, antennæ; 9 *b*, anterior leg; 9 *c*, posterior leg.
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——— fig. 3. Docophorus modularis, 3 *a*, antennæ; 3 *b*, posterior leg.
——— fig. 4. Docophorus variabilis, 4 *a*, antennæ; 4 *b*, anterior leg.
——— fig. 5. Docophorus Canuti.
——— fig. 6. Docophorus crassipes, 6 *a*, antennæ; 6 *b*, posterior leg; 6 *c*, anterior leg.
——— fig. 7. Docophorus Mergulæ; 7 *a*, antennæ.
——— fig. 8. Docophorus guttatus, 8 *a*, antennæ; 8 *b*, posterior leg; 8 *c*, anterior leg.
——— fig. 9. Docophorus superciliosus, 9 *a*, anterior leg; 9 *b*, posterior leg.
——— fig. 10. Docophorus Ocellatus, 10 *a*, antennæ.
——— fig. 11. Docophorus nisi, 11 *a*, antennæ; 11 *b*, posterior leg.
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——— fig. 2. Docophorus limosæ, 2 *a*, antennæ; 2 *b*, anterior leg.
——— fig. 3. Docophorus Pastoris, 3 *a*, antennæ; 3 *b*, posterior leg.
——— fig. 4. Docophorus Meropis, 4 *a*, antennæ.
——— fig. 5. Docophorus Turdi, 5 *a*, antennæ.

Plate IV. fig. 6. Docophorus auratus, 6 *a*, antennæ; 6 *b*, anterior leg.
——— fig. 7. Docophorus platystomus, 7 *a*, antennæ; 7 *b*, anterior leg.
— - ——— fig. 8. Docophorus atratus, 8 *a*, antennæ; 8 *b*, anterior leg; 8 *c*, posterior leg.
——— fig. 9. Docophorus plataleæ, 9 *a*, antennæ.
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— ——— fig. 2. Docophorus conicus, 2 *a*, antennæ; 2 *b*, anterior leg.
——— fig. 3. Docophorus Leontodon, 3 *a*, antennæ; 3 *b*, anterior leg.
——— fig. 4. Docophorus Ostralegi, 4 *a*, antennæ; 4 *b*, anterior leg.
——— fig. 5. Docophorus Megacephalus, 5 *a*, antennæ; 5 *b*, anterior leg; 5 *c*, posterior leg.
——— fig. 6. Docophorus Ralli, 6 *a*, antennæ; 6 *b*, anterior leg.
——— fig. 7. Docophorus humeralis, 7 *a*, antennæ.
——— fig. 8. Docophorus cincli, 8 *a*, antennæ.
——— fig. 9. Docophorus Lari, 9 *a*, antennæ.
——— fig. 10. Docophorus communis, 10 *a*, antennæ; 10 *b*, posterior leg; 10 *c*, anterior leg.
——— fig. 11. Docophorus Icterodes, 11 *a*, antennæ.
——— fig. 12. Docophorus Passerinus, 12 *a*, antennæ; 12 *b*, anterior leg.
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——— fig. 2. Nirmus cuspidatus, 2 *a*, antennæ; 2 *b*, anterior leg; 2 *c*, posterior leg.
——— fig. 3. Docophorus Bassani, 3 *a*, antennæ; 3 *b*, anterior leg; 3 *c*, one of the fasciculi of hairs at the base of the thorax.
——— fig. 4. Docophorus reguli, 4 *a*, antennæ; 4 *b*, posterior leg.
——— fig. 5. Docophorus incompletus, 5 *a*, antennæ; 5 *b*, anterior leg.
——— fig. 6. Docophorus Pari, 6 *a*, antennæ.
——— fig. 7. Nirmus decipiens, (young?), 7 *a*, antennæ; 7 *b*, anterior leg; 7 *c*, posterior leg.
——— fig. 8. Nirmus Hypoleucus, 8 *a*, antennæ; 8 *b*, anterior leg; 8 *c*, posterior leg.
——— fig. 9. Docophorus tricolor, 9 *a*, antennæ; 9 *b*, anterior leg.
——— fig. 10. Nirmus turmalis, 10 *a*, anterior leg; 10 *b*, antennæ.
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——— fig. 2. Nirmus tessellatus, 2 *a*, antennæ; 2 *b*, anterior leg.
——— fig. 3. Docophorus Bassani (immature), 3 *a*, antennæ; 3 *b*, anterior leg.
——— fig. 4. Nirmus elongatus, 4 *a*, antennæ.
— - ——— fig. 5. Nirmus sellatus, 5 *a*, antennæ; 5 *b*, anterior leg.
——— fig. 6. Nirmus vanelli, 6 *a*, anterior leg; 6 *b*, antennæ.
——— fig. 7. Nirmus viscivori, 7 *a*, antennæ; 7 *b*, anterior leg; 7 *c*, posterior leg.
——— fig. 8. Nirmus Œdicnemi, 8 *a*, antennæ; 8 *b*, posterior leg.
——— fig. 9. Docophorus serrilimbus, 9 *a*, antennæ; 9 *b*, posterior leg.
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——— fig. 2. Nirmus marginalis, 2 *a*, antennæ; 2 *b*, posterior leg.
——— fig. 3. Nirmus glandari, 3 *a*, antennæ; 3 *b*, anterior leg; 3 *c*, posterior leg.
——— fig. 4. Nirmus argulus, 4 *a*, anterior leg; 4 *b*, antennæ; 4 *c*, posterior.
——— fig. 5. Nirmus annulatus, 5 *a*, anterior leg; 5 *b*, antennæ.
— ——— fig. 6. Nirmus Phalaropi, 6 *a*, posterior leg; 6 *b*, anterior leg; 6 *c*, antennæ.
- - - ——— fig. 7. Nirmus Rallinus, 7 *a*, antennæ; 7 *b*, posterior leg.
——— fig. 8. Docophorus Colymbinus, 8 *a*, antennæ.
——— fig. 9. Nirmus Stramineus, 9 *a*, antennæ.

Plate IX. fig. 1. Nirmus Alcæ.
——— fig. 2. Nirmus Fulicæ.
——— fig. 3. Nirmus limbatus.
——— fig. 4. Nirmus iliaci, 4 *a*, antennæ: 4 *b*, anterior leg.
——— fig. 5. Nirmus junceus, 5 *a*, anterior leg; 5 *b*, antennæ.
——— fig. 6. Nirmus Numenii, 6 *a*, antennæ; 6 *b*, anterior leg; 6 *c*, posterior leg.
——— fig. 7. Nirmus claviformis, 7 *a*, antennæ; 7 *b*, anterior leg; 7 *c*, posterior leg.
——— fig. 8. Nirmus fuscus, 8 *a*, antennæ; 8 *b*, anterior leg.
——— fig. 9. Nirmus cameratus, 9 *a*, antennæ; 9 *b*, anterior leg; 9 *c*, posterior leg.
——— fig. 10. Nirmus discocephalus, 10 *a*, antennæ; 10 *b*, anterior leg.
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——— fig. 2. Nirmus attenuatus, 2 *a*, antennæ.
——— fig. 3. Nirmus Hæmatopi, 3 *a*, antennæ; 3 *b*, anterior leg; 3 *c*, posterior leg.
——— fig. 4. Nirmus Apiastri, 4 *a*, antennæ.
——— fig. 5. Nirmus Numidæ, 5 *a*, antennæ.
——— fig. 6. Nirmus obscurus, 6 *a*, antennæ.
——— fig. 7. Nirmus Phæopi, 7 *a*, antennæ.
——— fig. 8. Nirmus fissus, 8 *a*, antennæ; 8 *b*, posterior leg.
——— fig. 9. Nirmus Podicepis, 9 *a*, antennæ.
——— fig. 10. Nirmus holophæus, 10 *a*, antennæ.
——— fig. 11. Nirmus latirostris, 11 *a*, antennæ.
——— fig. 12. Lipeurus luridus, 12 *a*, antennæ.
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——— fig. 2. Nirmus decipiens, 2 *a*, antennæ.
——— fig. 3. Nirmus cingulatus, 3 *a*, antennæ.
——— fig. 4. Nirmus strepsilaris.
——— fig. 5. Nirmus olivaceus, 5 *a*, antennæ; 5 *b*, posterior leg.
——— fig. 6. Nirmus cyclothorax, 6 *a*, antennæ.
——— fig. 7. Nirmus gracilis, 7 *a*, antennæ; 7 *b*, posterior leg.
——— fig. 8. Nirmus Scolopacis, 8 *a*, antennæ.
——— fig. 9. Nirmus tenuis, 9 *a*, antennæ; 9 *b*, anterior leg.
——— fig. 10. Nirmus Hiaticulæ, 10 *a*, antennæ.
——— fig. 11. Nirmus rufus, 11 *a*, antennæ; 11 *b*, anterior leg.
——— fig. 12. Nirmus ochropi.
——— fig. 13. Nirmus nebulosus.
Plate XII. fig. 1. Goniodes falcicornis, *a*, posterior leg; *b*, anterior leg; *c*, antennæ of the male; *d*, do. of the female.
——— fig. 2. Goniodes stylifer, *e*, antennæ of the male; *f*, do. of the female; *g*, posterior leg; *h*, anterior leg.
——— fig. 3. Goniodes falcicornis (immature), *l*, antennæ of the male; *m*, do. of female.
——— fig. 4. Goniodes Colchici, *i*, antennæ of the male; *k*, do. of female.
——— fig. 5. Goniodes Dispar, *n*, antennæ of the male; *o*, antennæ of the female.
——— fig. 6. Goniodes Dissimilis, *p*, anterior leg; *q*, posterior leg.
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——— fig. 2. Goniocotes compar, 2 *a*, antennæ; 2 *b*, anterior leg; 2 *c*, posterior leg.
——— fig. 3. Goniodes Tetraonis, 3 *a*, antennæ of the male; 3 *b*, antennæ of female; 3 *c*, anterior leg; 3 *d*, posterior leg.
——— fig. 4. Goniocotes hologaster, 4 *a*, antennæ.
——— fig. 5. Lipeurus Ebræus, 5 *a*, antennæ of the male; 5 *b*, do. of female; 5 *c*, anterior leg.

Plate XIII. fig. 6. Goniodes Ortygis, 6 *a*, antennæ of the male ; 6 *b*, do. of female ; 6 *c*, anterior leg ; 6 *d*, posterior do.
——— fig. 7. Goniodes Numidianus, 7 *a*, antennæ of the male; 7 *b*, anterior leg.
——— fig. 8. Lipeurus brevicornis, 8 *a*, antennæ of the male; 8 *b*, antennæ of female; 8 *c*, anterior leg.
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——— fig. 2. Lipeurus pelagicus, 2 *a*, antennæ ; 2 *b*, anterior leg ; 2 *c*, posterior leg ; 2 *d*, mandibles.
——— fig. 3. Lipeurus Baculus, 3 *a*, antennæ of the male ; 3 *b*, anterior leg ; 3 *c*, antennæ of female ; 3 *d*, posterior leg.
——— fig. 4. Lipeurus leucopygus, 4 *a*, anterior leg ; 4 *b*, antennæ of the male ; 4 *c*, do. of female ; 4 *d*, posterior leg.
——— fig. 5. Lipeurus squalidus, 5 *a*, antennæ of female ; 5 *b*, do. of the male ; 5 *c*, anterior leg ; 5 *d*, posterior leg.
——— fig. 6. Lipeurus tadornæ, 6 *a*, antennæ ; 6 *b*, anterior leg ; 6 *c*, posterior leg.
——— fig. 7. Lipeurus temporalis, 7 *a*, antennæ ; 7 *b*, posterior leg.
Plate XV. fig. 1. Lipeurus gyricornis, 1 *a*, anterior leg ; 1 *b*, antennæ ; 1 *c*, posterior leg.
——— fig. 2. Lipeurus Staphylinoides, 2 *a*, antennæ of female ; 2 *b*, antennæ of male ; 2 *c*, anterior leg ; 2 *d*, posterior leg.
——— fig. 3. Lipeurus Stellaris, 3 *a*, antennæ of male; 3 *b*, anterior leg.
——— fig. 4. Lipeurus jejunus, 4 *a*, antennæ of male ; 4 *b*, anterior leg.
——— fig. 5. Lipeurus polytrapezius, 5 *a*, antennæ of the male extended ; 5 *b*, do. curved ; 5 *c*, anterior leg ; 5 *d*, posterior leg ; 5 *e*, antennæ of female ; 5 *f*, one of the fasciculi of hairs at the base of the thorax.
——— fig. 6. Lipeurus variabilis, 6 *a*, head of the male ; 6 *b*, the antennæ of the male ; 6 *c*, do. of female.
——— fig. 7. Lipeurus versicolor, 7 *a*, antennæ of male; 7 *b*, posterior leg ; 7 *c*, anterior leg.
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Plate XVII. fig 1. Trichodectes latus, *a*, antennæ of the male ; *b*, antennæ of female ; *c*, posterior leg ; *h*, labium and labial palpi.
——— fig. 2. Trichodectes dubius, *d*, antennæ ; *e*, posterior leg.
——— fig. 3. Trichodectes crassus, *f*, antennæ of the male ; *g*, posterior leg.
——— fig. 4. Trichodectes sphærocephalus, *i*, antennæ ; *k*, clypeus *l*, anterior leg ; *m*, posterior leg.
——— fig. 5. Trichodectes vulpis, *n*, antennæ ; *o*, anterior leg ; *p*, posterior leg.
——— fig. 6. Trichodectes similis, *q*, posterior leg ; *r*, antennæ ; *s*, anterior leg.
——— fig. 7. Trichodectes Equi, *t*, posterior leg ; *u*, anterior leg ; *v*, antennæ.
——— fig. 8. Trichodectes longicornis, *w*, posterior leg ; *x*, antennæ.
——— fig. 9. Trichodectes scalaris, *y*, antennæ ; *z*, posterior leg.
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——— fig. 2. Colpocephalum flavescens, 2 *a*, antennæ ; 2 *b*, anterior leg.

Plate XVIII. fig. 3. Colpocephalum ochraceum, 3 *a*, antennæ; 3 *b*, one of the maxillary palpi, labium and labial palpi; 3 *c*, anterior leg; 3 *d*, posterior leg; 3 *e*, prothorax.

——— fig. 4. Colpocephalum piceum, 4 *a*, prothorax; 4 b, antennæ; 4 *c*, anterior leg.

——— fig. 5. Colpocephalum subæquale.

——— fig. 6. Colpocephalum eurysternus, 6 *a*, antennæ; 6 *b*, labial and maxillary palpi; 6 *c*, anterior leg.

——— fig 7. Menopon troglodyti, 7 *a*, anterior leg; 7 *b*, posterior leg.

——— fig. 8. Colpocephalum 4-pustulatus, 8 *a*, anterior leg; 8 *b*. posterior leg.

——— fig. 9. Menopon scopulacorne, 9 *a*, antennæ.

Plate XIX. fig. 1. Colpocephalum Haliæeti, 1 *a*, posterior leg.

——— fig. 2. Colpocephalum Zebra, 2 *a*, posterior leg.

——— fig. 3. Female genital organs of the Human Louse,—*from Swammerdam*, *a*, external anal orifice; *bb*, the cleft extremities of the oviducts; *c*, one of the secondary branches of the oviducts; *d*, perfect ovum in situ; *e*, ova in an early state of developement; *ff*, division of the ovary into two common ducts; *gg*, the 5 oviducts united at their extremities, as in nature; *h*, uterus; *i*, perfect ovum in its passage to the vagina; *kk*, the collecterium or varnish secretor; *l*, neck of the uterus.

Plate XX. fig. 1. Menopon nigropleura, 1 *a*, posterior leg; 1 *b*, posterior leg.

——— fig. 2. Menopon mesoleucum, 2 *a*, anterior leg; 2 *b*, mid-leg; 2 *c*, the oral apparatus exclusive of the labrum—mandibulæ; 2 *d*, posterior leg.

——— fig. 3. Menopon ridibundis, 3 *a*, posterior leg.

——— fig. 4. Colpocephalum Fregili, 4 *a*, antennæ; 4 *b*, posterior leg.

——— fig. 5. Menopon Pici, 5 *a*, posterior leg.

——— fig. 6. Menopon sinuatum, 6 *a*, posterior leg.

——— fig. 7. Menopon Carduelis, 7 *a*, posterior leg.

——— fig. 8. Menopon icterum, 8 *a*,

——— fig. 9. Colpocephalum Nyctarde.

Plate XXI. fig. 1. Colpocephalum turbinatum, *a*, posterior leg.

——— fig. 2. Menopon giganteum, *b*, posterior leg; *c*, anterior leg.

——— fig. 3. Menopon citrinellæ.

——— fig. 4. Menopon fusco-cinctum, *d*, posterior leg.

——— fig. 5. Menopon pallidum, *e*, antennæ; *f*, posterior leg; *g*, anterior leg.

——— fig. 6. Menopon fulvo-maculatum, *h*, posterior leg.

——— fig. 7. Menopon transversum, *i*, posterior leg.

——— fig. 8. Menopon strepsilæ, *k*, posterior leg.

——— fig. 9. Menopon Perdicis.

Plate XXII. fig. 1. Trinoton conspurcatum, 1 *a*, antennæ; 1 *b* and *c*, anterior leg, different views; 1 *d*, posterior leg; 1 *f*, oral apparatus.

——— fig. 2. Trinoton luridum, 2 *a*, anterior leg, upper side; 2 *b*, anterior leg, underside; 2 *e*, mid leg.

——— fig. 3. Trinoton squalidum, 3 *a*, posterior leg; 3 *b*, anterior leg.

——— fig. 4. Eureum cimicoides, 4 *a*, anterior leg; 4 *b*, posterior leg; 4 *c*, maxillary palpi.

——— fig. 5. Nitzschia Burmeisteri, 5 *a*, antennæ; 5 *b*, maxillary and labial palpi; 5 *c*, posterior leg; 5 *d*, anterior leg, upper side; 5 *e*, do. front view.

Plate XXIII. fig. 1. Ornithobius Cygni, 1 *a*, posterior leg; 1 *b*, anterior leg; 1 *c*, one of the clypeal processes; 1 *d*, one of the mandibles; 1 *e*, antennæ; 1 *f*, antennæ of female.
——— fig. 2. Ornithobius gonioplurus, 2 *a*, posterior leg; 2 *b*, anterior leg; 2 *c*, antennæ of the female; 2 *d*, antennæ of the male.
——— fig. 3. Ornithobius atro-marginatus, 3 *a*, antennæ; 3 *b*, anterior leg.
——— fig. 4. Laemobothrium laticolle, 4 *a*, under view of the oral apparatus; 4 *b*, maxillary palpi; 4 *c*, labial palpi; 4 *d*, posterior leg.
——— fig. 5. Physostomum Bombycillæ, 6 *a*, posterior leg.
——— fig. 6. Physostomum mystax, 5 *a*, posterior leg.
Plate XXIV. fig. 1. Gyropus ovalis, 1 *a*, anterior leg; 1 *b*, posterior leg; 1 *c*, antennæ.
——— fig. 2. Gyropus gracilis, 2 *d*, antennæ; 2 *e*, posterior leg; 2 *f*, anterior leg.
——— fig. 3. Hæmatopinus acanthopus, 3 *a*, posterior leg; 3 *b*, antennæ.
——— fig. 4. Hæmatopinus Lyriocephalus, 4 *a*, antennæ; 4 *b*, anterior leg; 4 *c*, posterior leg; 4 *d*, ova.
——— fig. 5. Hæmatopinus spinulosus, 5 *a*, antennæ; 5 *b*, anterior leg; 5 *c*, posterior leg.
——— fig. 6. Hæmatopinus spiniger, 6 *a*, posterior leg; 6 *b*, antennæ.
Plate XXV. fig. 1. Hæmatopinus Asini, *a*, anterior leg; *b*, antennæ.
——— fig. 2. Hæmatopinus suis, *c*, anterior leg; *d*, antennæ; *e*, magnified view of the Haustellum.
——— fig. 3. Hæmatopinus Vituli, *g*, antennæ; *h*, posterior leg.
——— fig. 4. Hæmatopinus piliferus, *i*, antennæ; *k*, posterior leg.
——— fig. 5. Hæmatopinus eurysternus, *l*, antennæ; *m*, anterior leg; *f*, one of the ova.
——— fig. 6. Hæmatopinus ventricosus, *n*, antennæ; *o*, posterior leg.
Plate XXVI. fig. 1. Pediculus vestimenti, *a*, antennæ; *b*, posterior leg; *c*, anterior leg; *e*, haustellum withdrawn; *f*, do. partially protruded; *g*, do. exhibiting the lateral horny hooks; *h*, do. with the setiferous sheath.
——— fig. 2. Pediculus Capitis, *i*, anterior leg; *j*, posterior leg; *d*, antennæ.
——— fig. 3. Phthirius inguinalis, *k*, anterior leg; *l*, antennæ; *m*, posterior leg.

† † No allusion is made in the body of the work to fig. 7, pl. VI. which was drawn from a specimen found beneath the wing of an Avocett, which had been stuffed upwards of 20 years. Several months subsequently, I received recent specimens of the *Nirmus decipiens*, pl. XI. fig. 2. from Dr. Burmeister, and upon comparing the above with these, I suspected it might be the immature state of that species, but from the dried and evidently much altered appearance of the specimen, I could not satisfy myself upon their identity, though it bore a strong resemblance in some points. For this reason I omitted any description lest I should lead to error.

ALPHABETICAL ENGLISH INDEX

OF

QUADRUPEDS AND BIRDS, FROM WHICH PARASITES ARE FIGURED,

WITH

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*** The Author will feel greatly obliged by the receipt of any Parasitic Insects from animals not recorded in this List, as also for foreign specimens of the same tribe, which may frequently be seen adhering to the feathers of skins brought to this country, more particularly under the wings.

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THE END.

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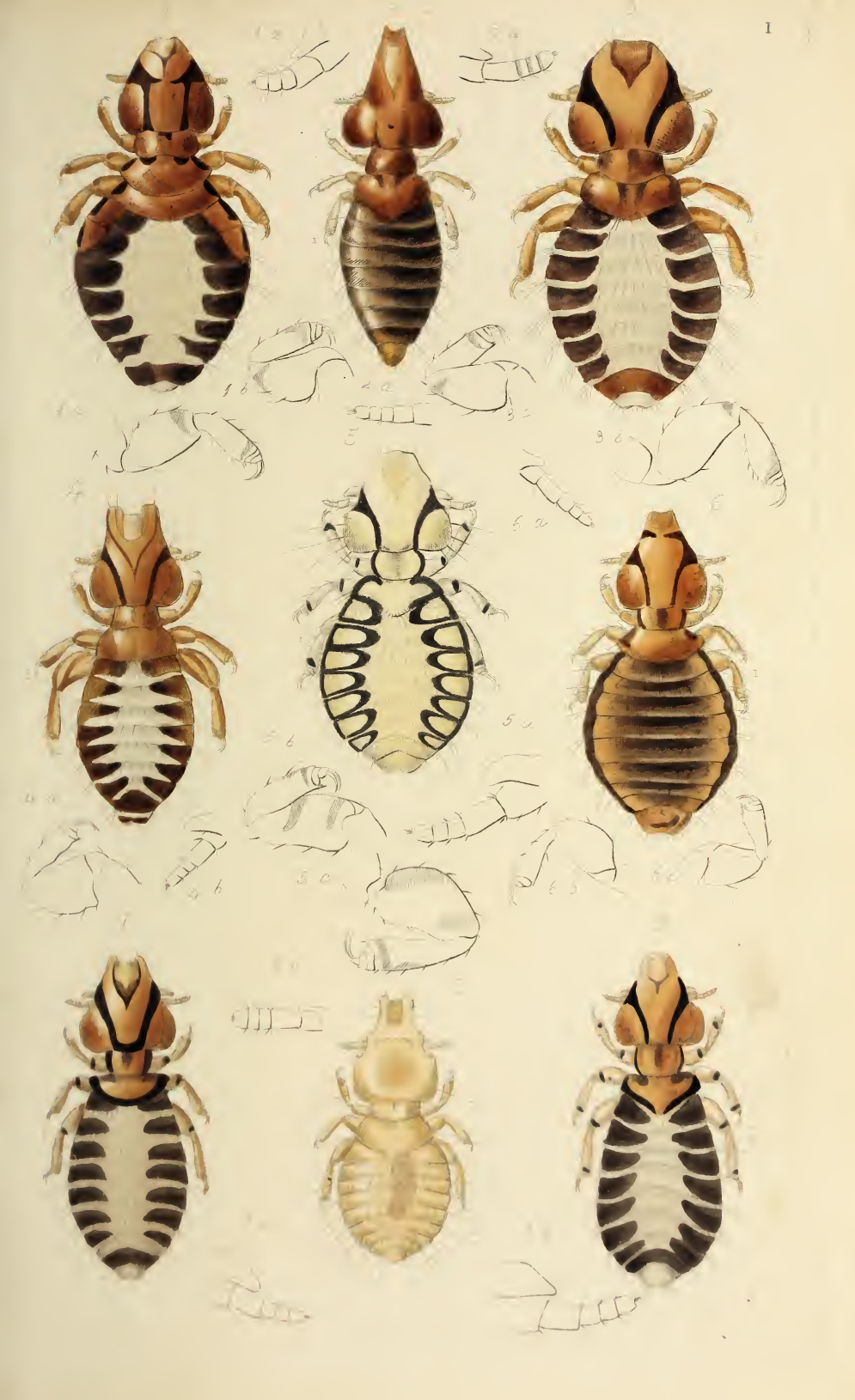

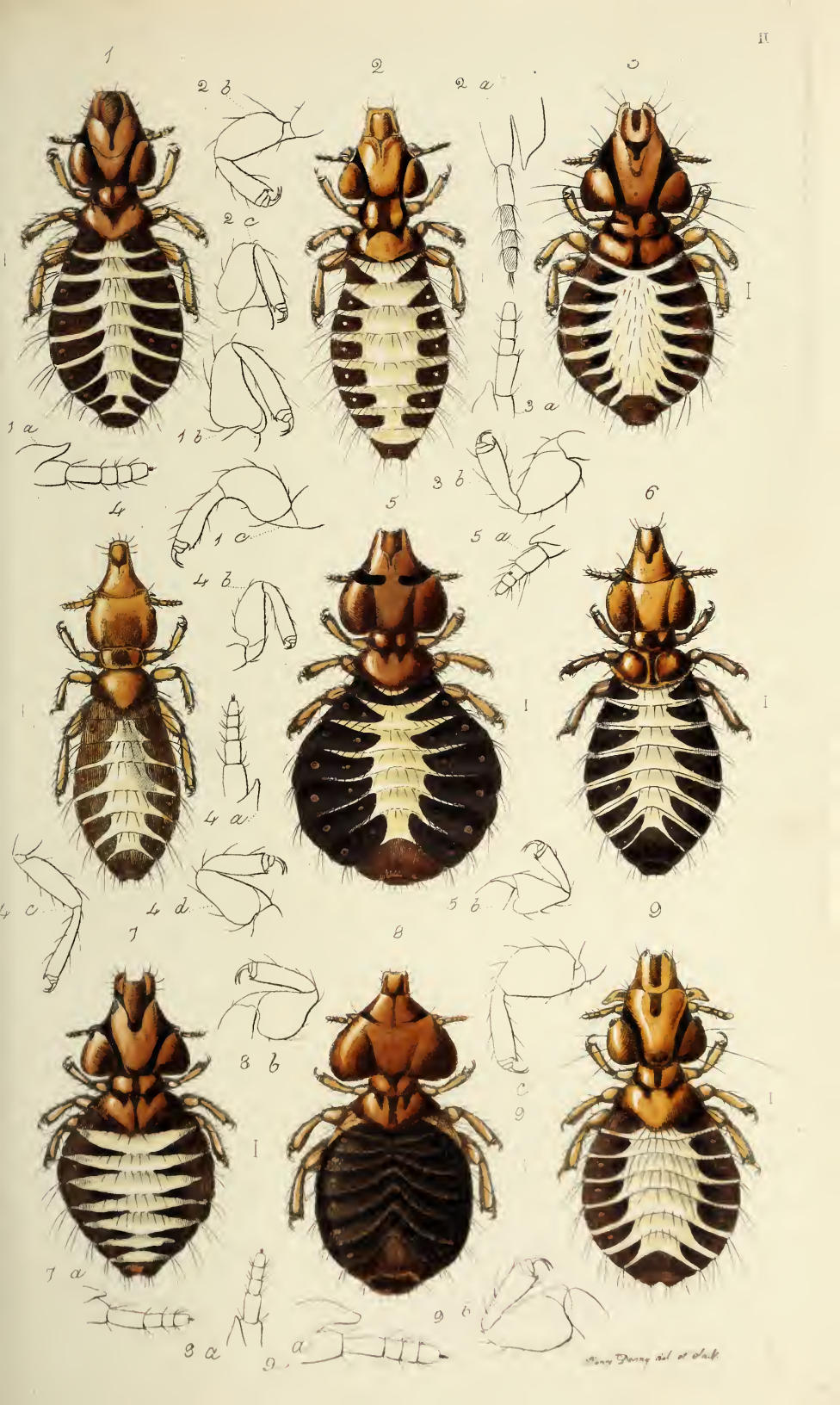
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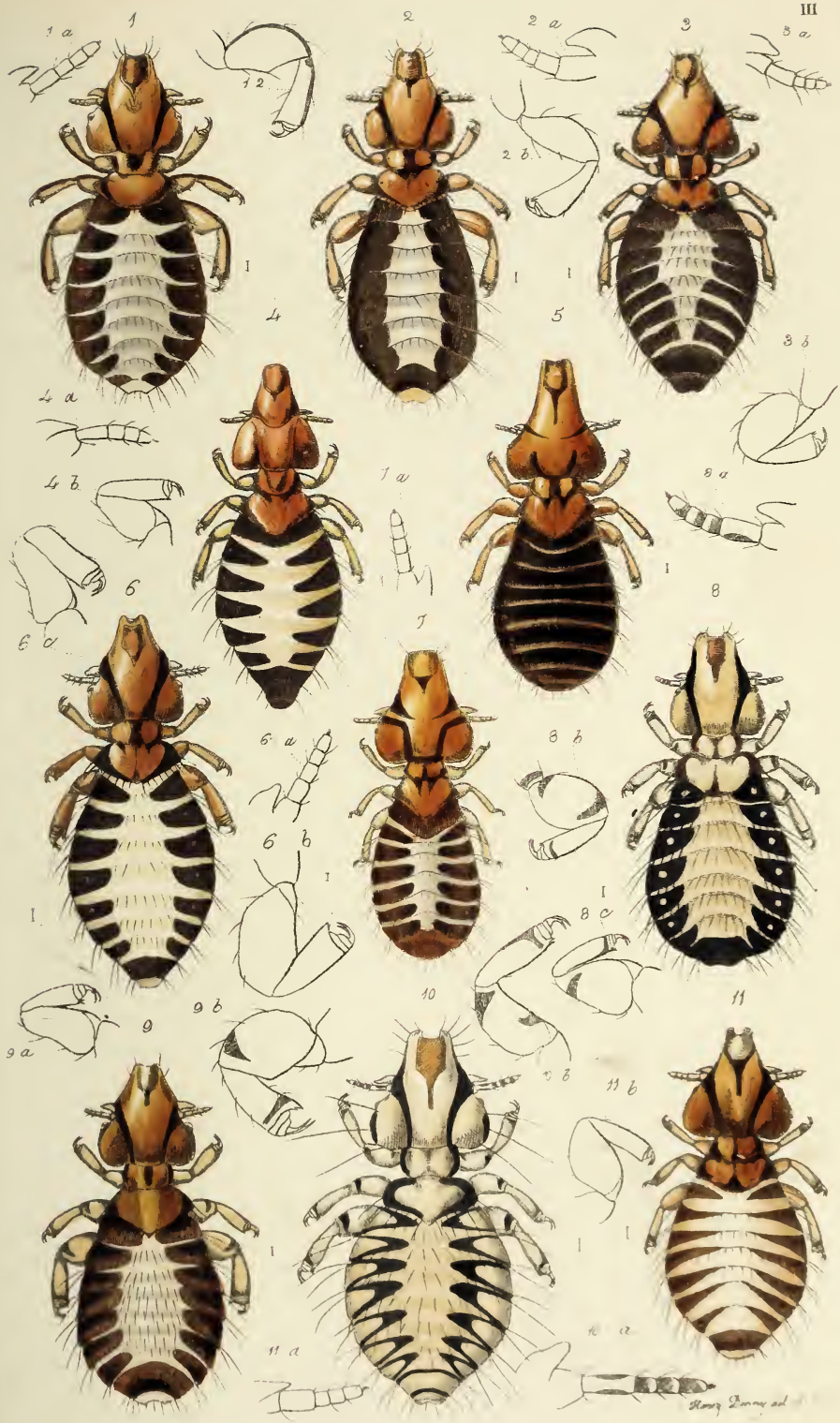
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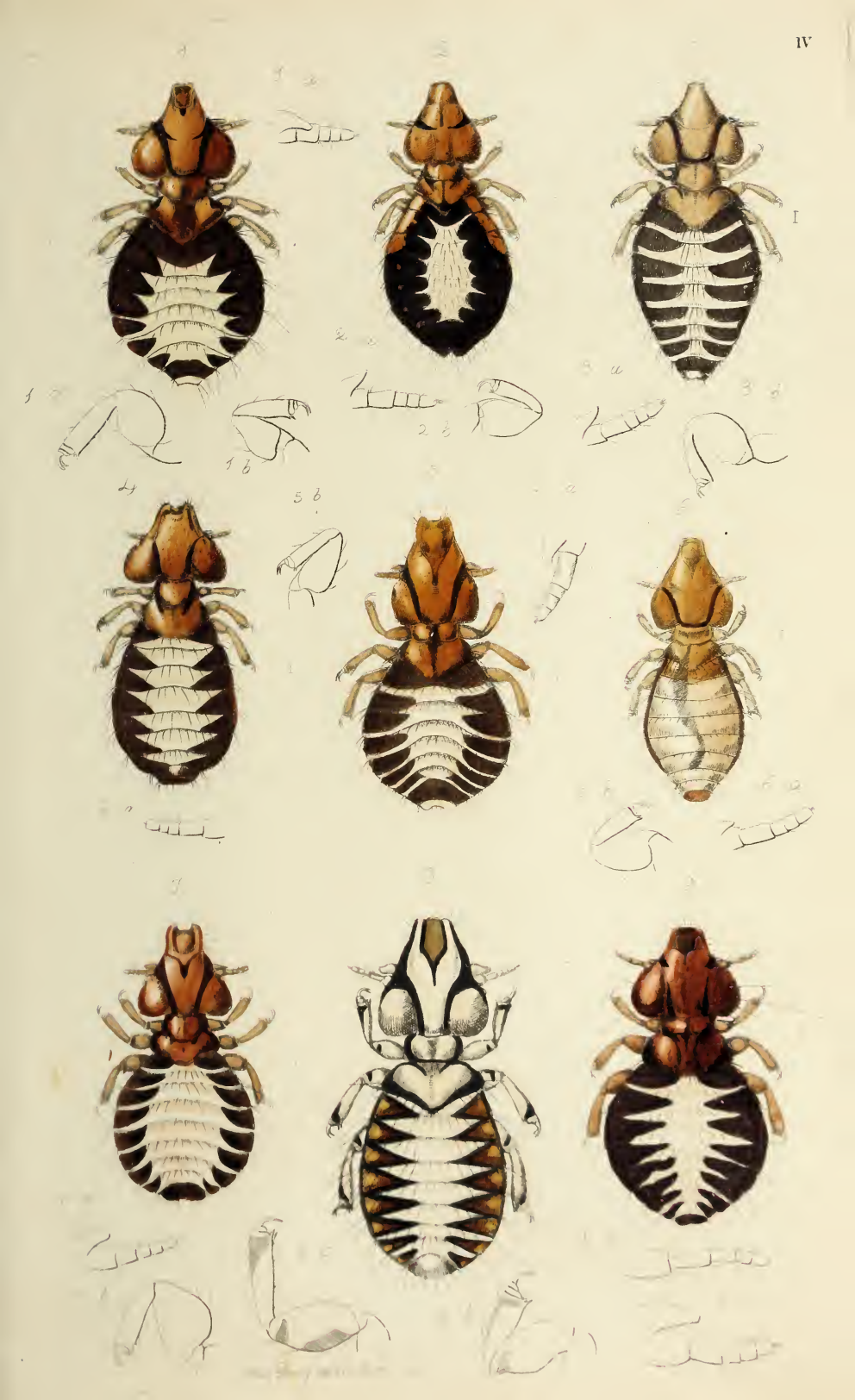

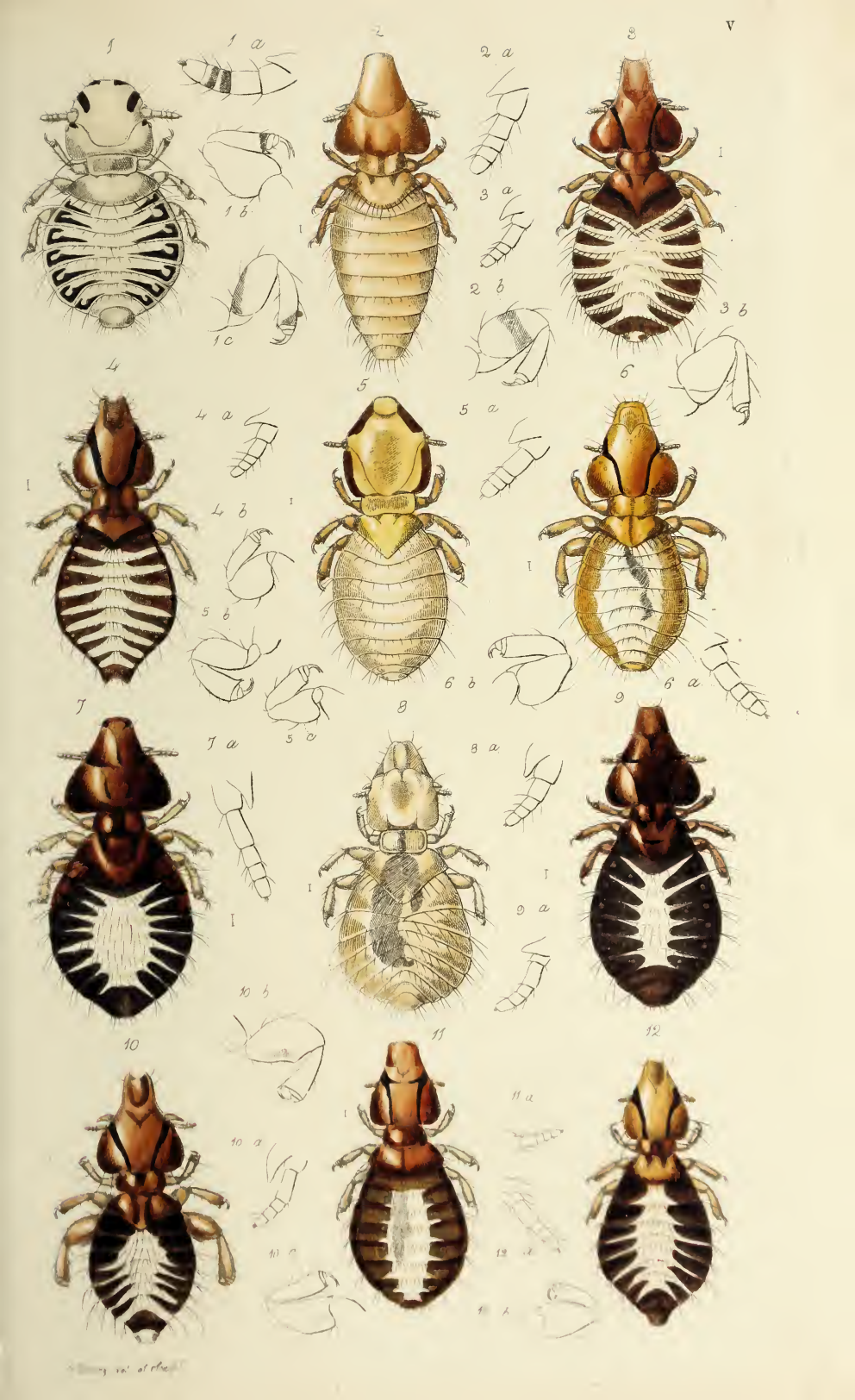

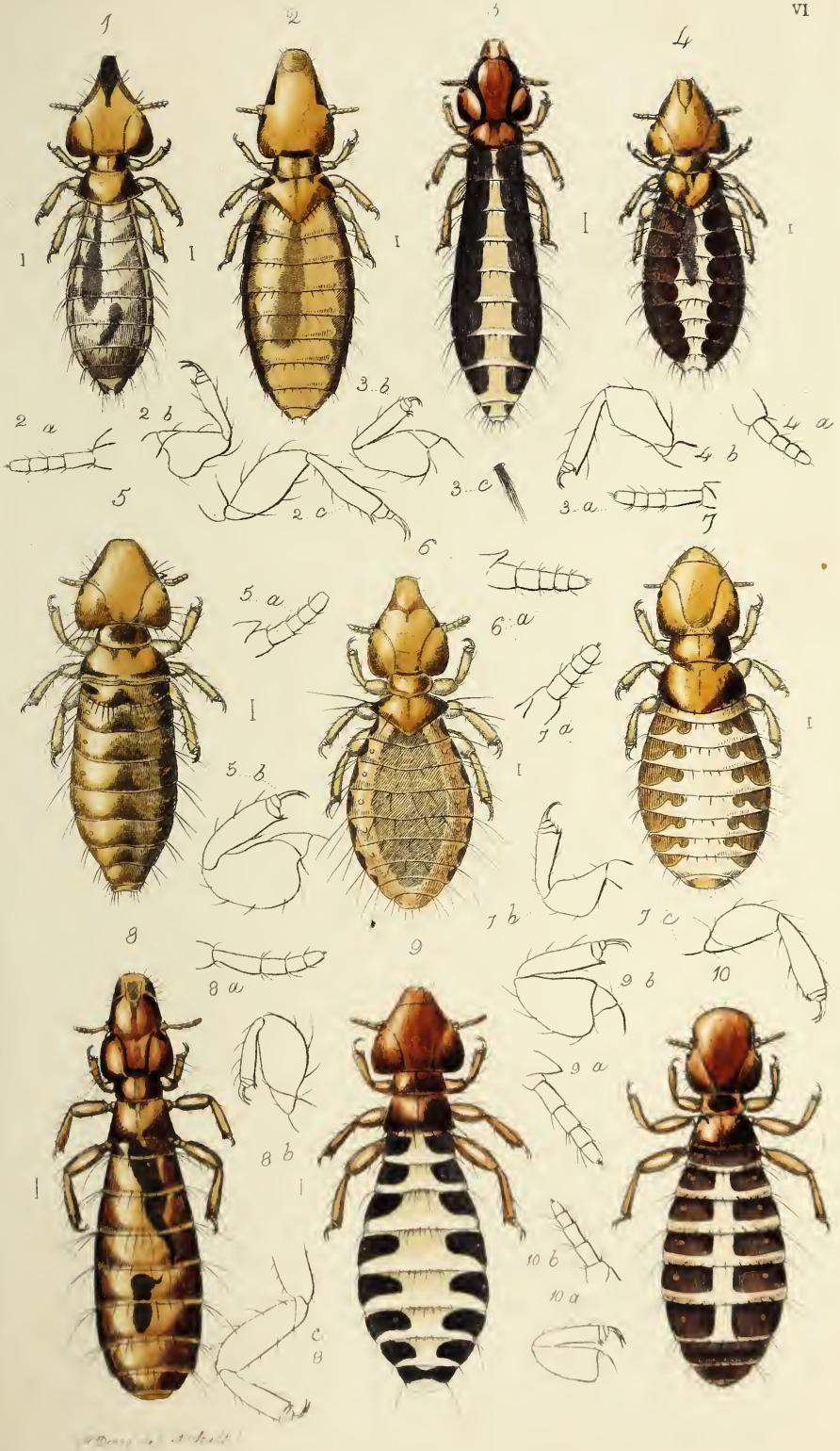
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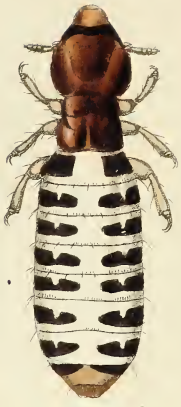
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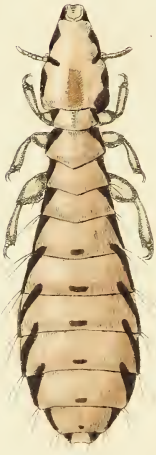
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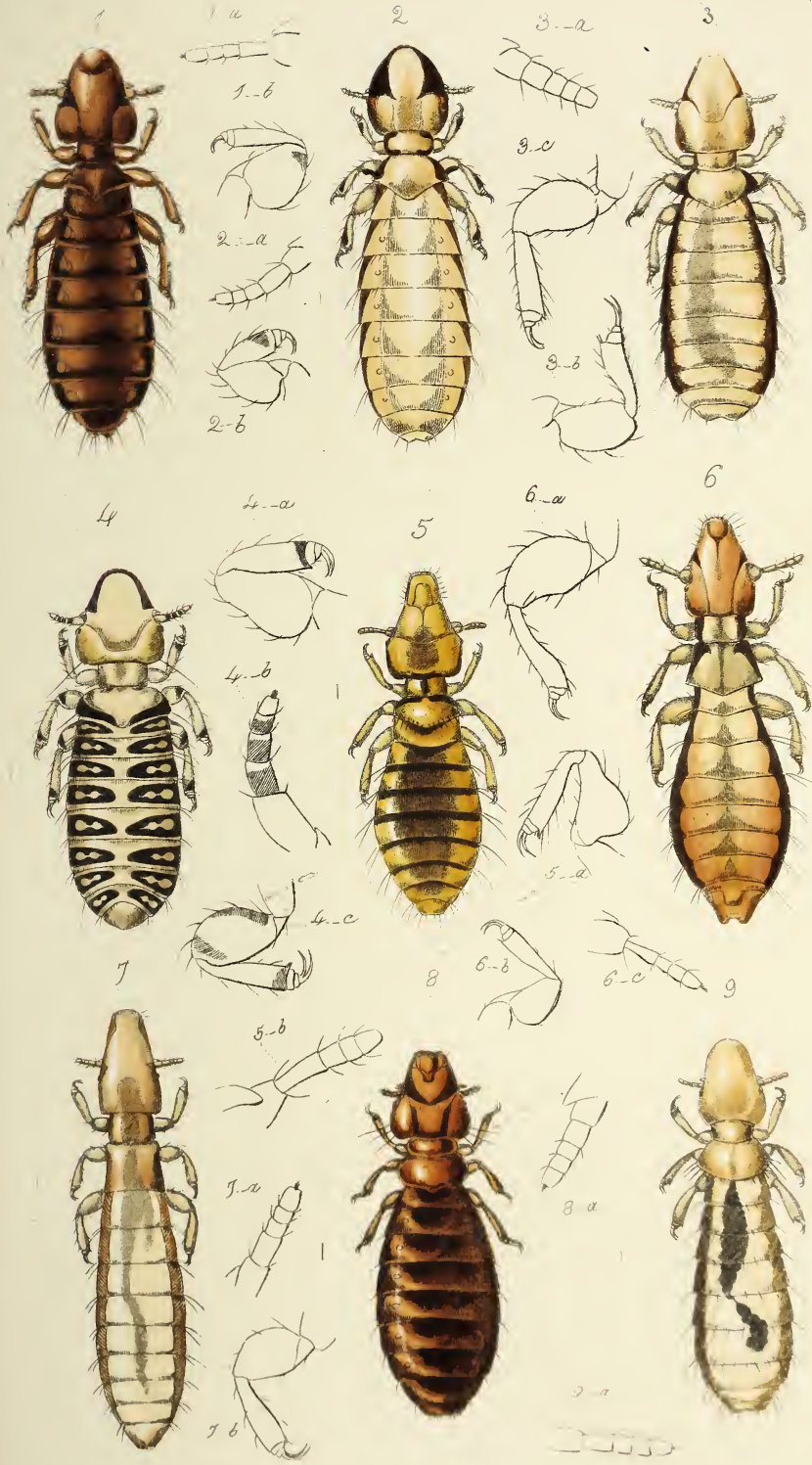
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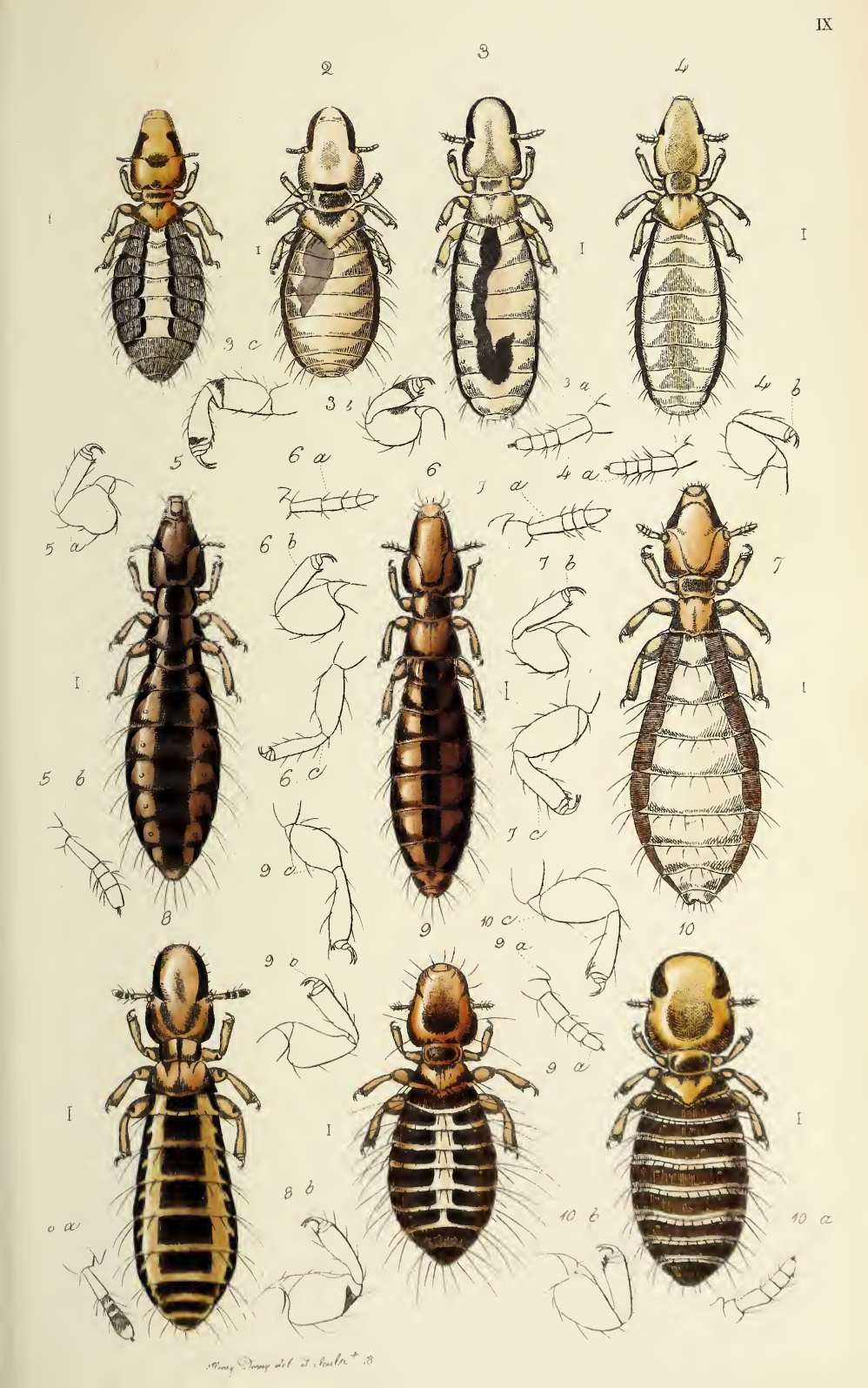
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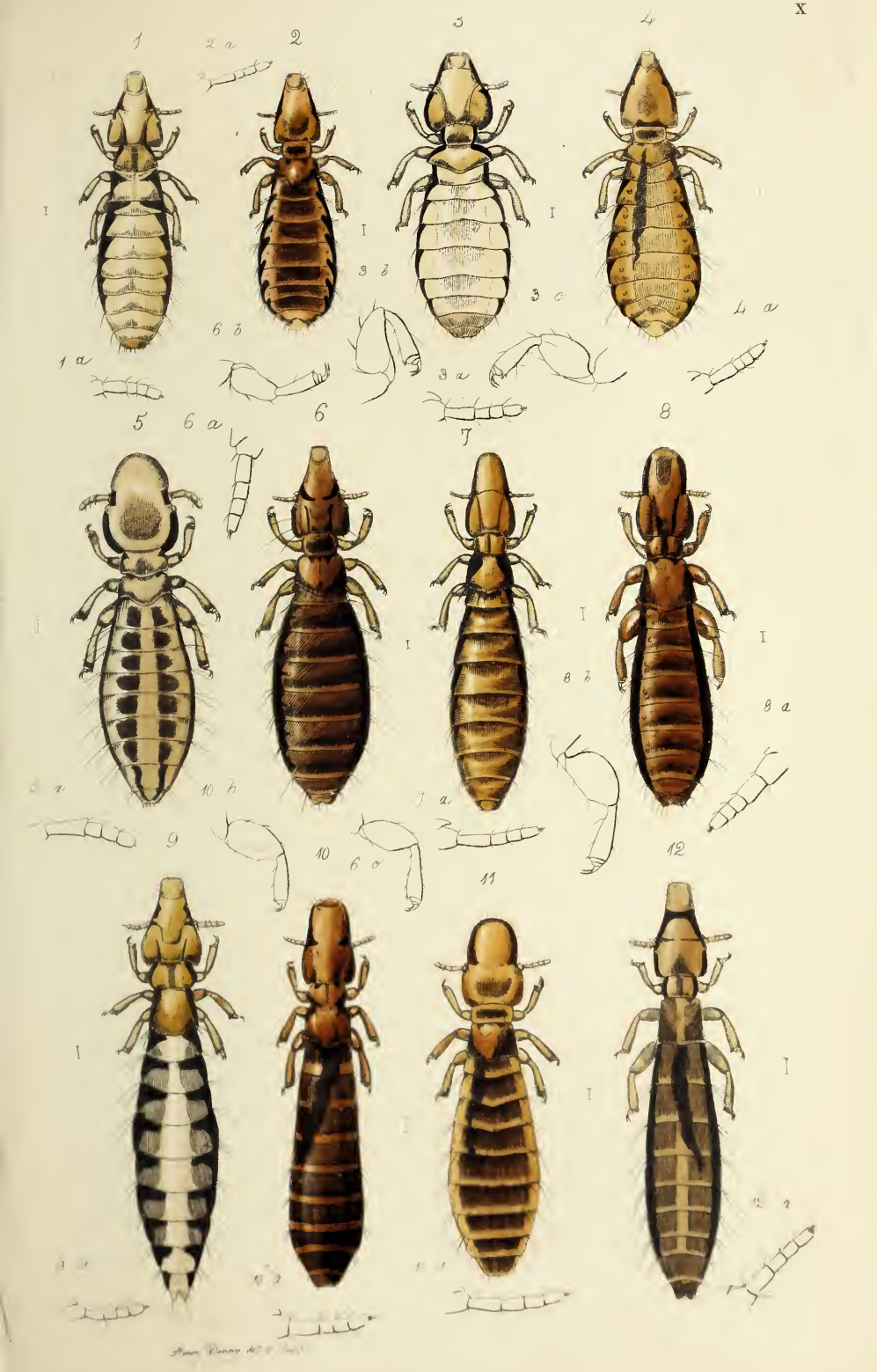
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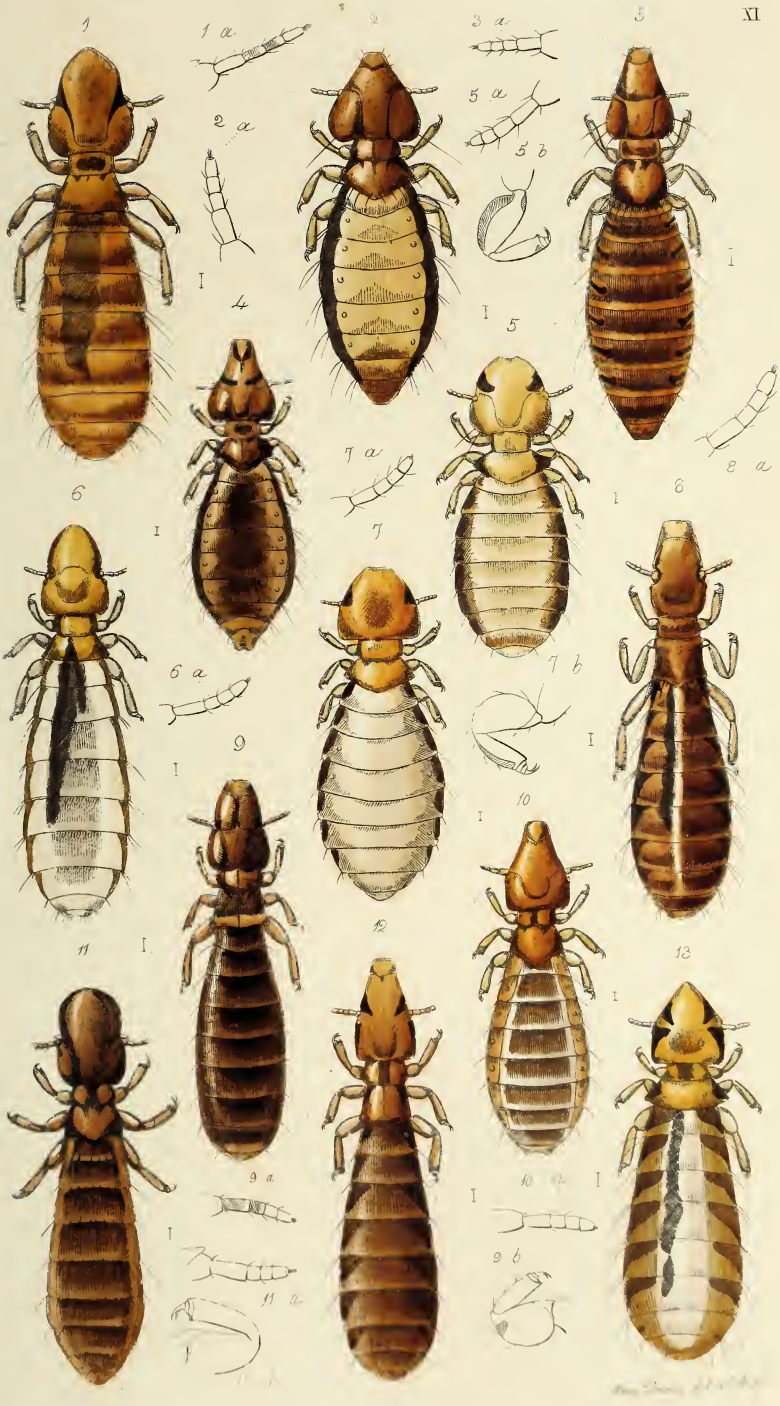
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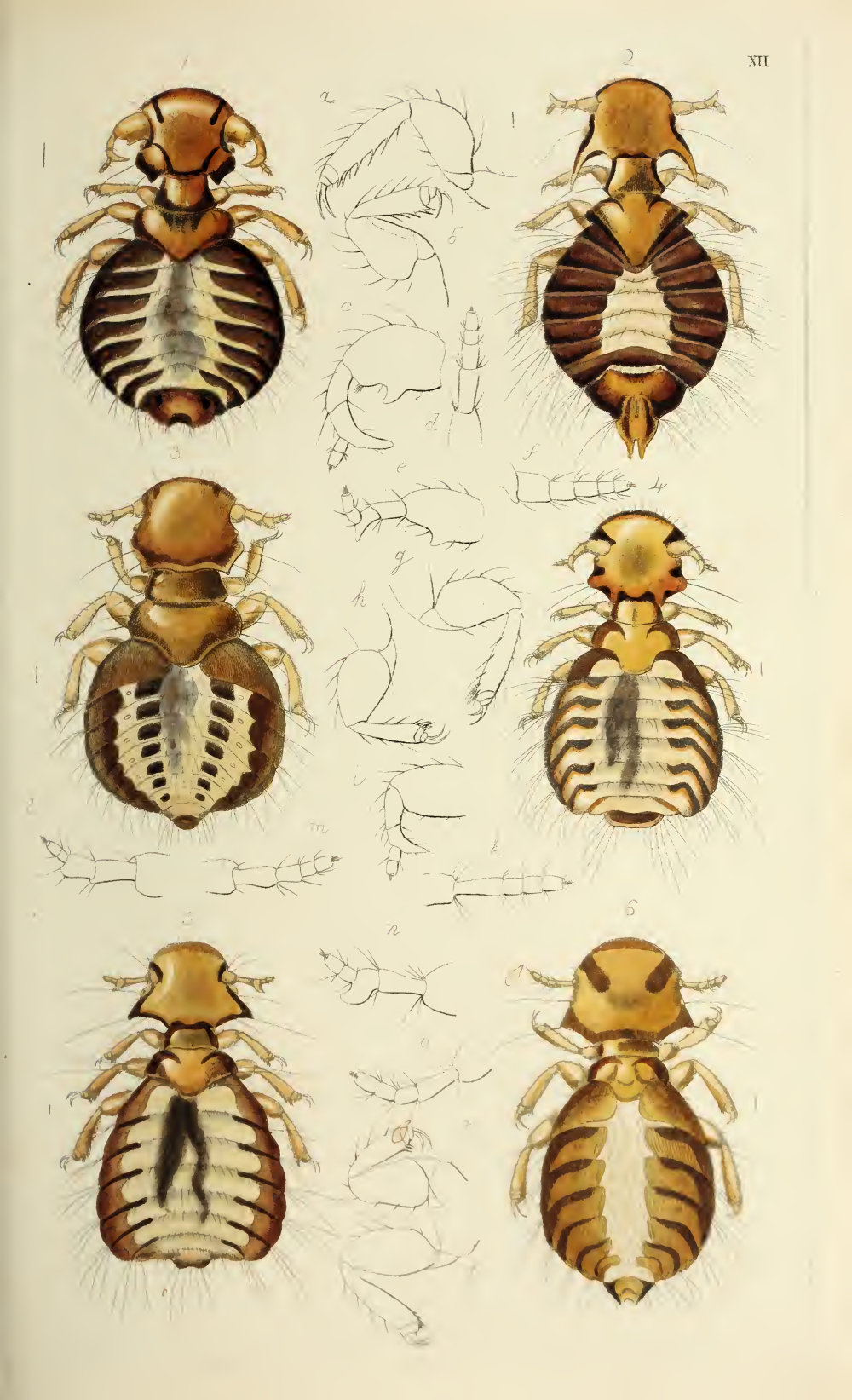

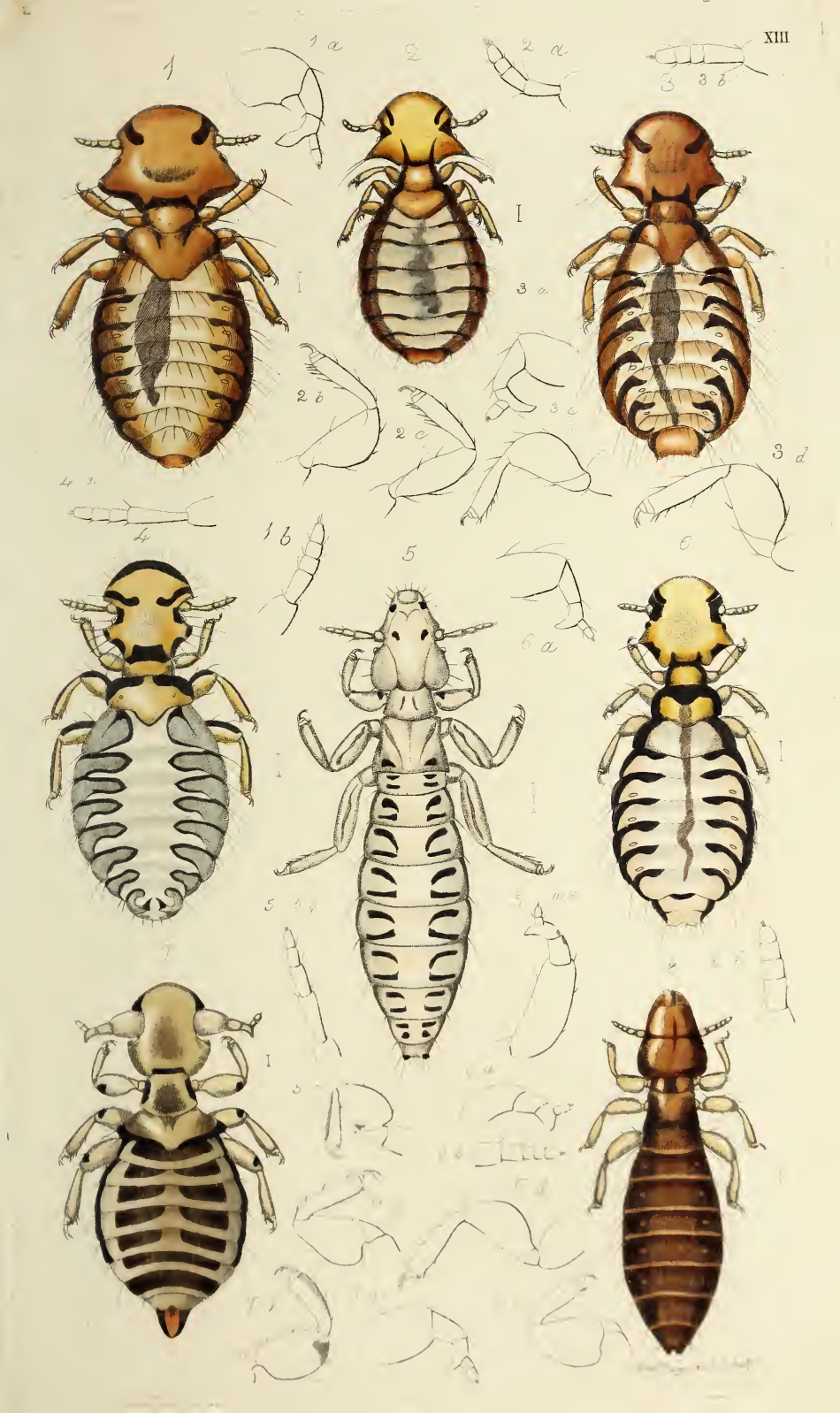
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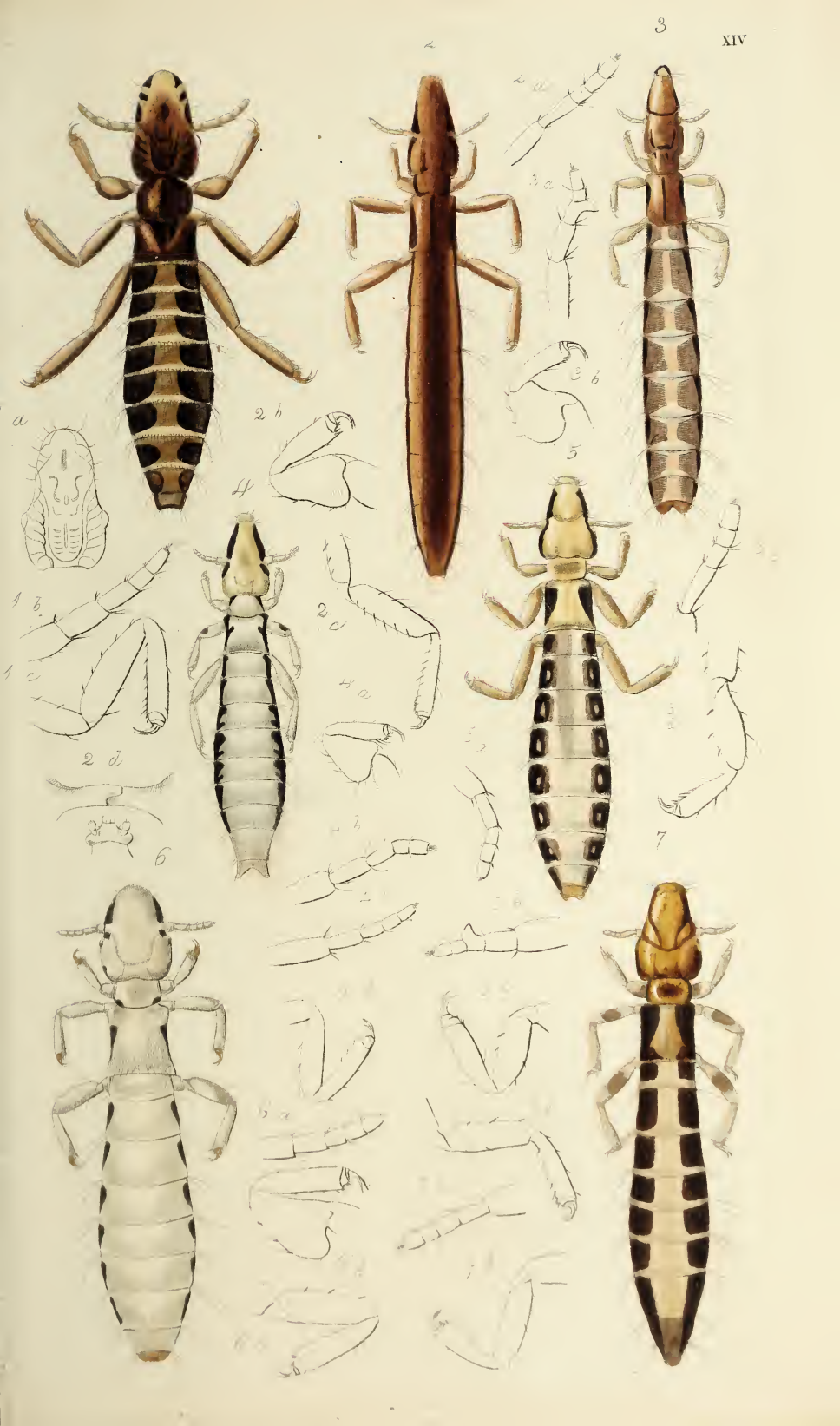

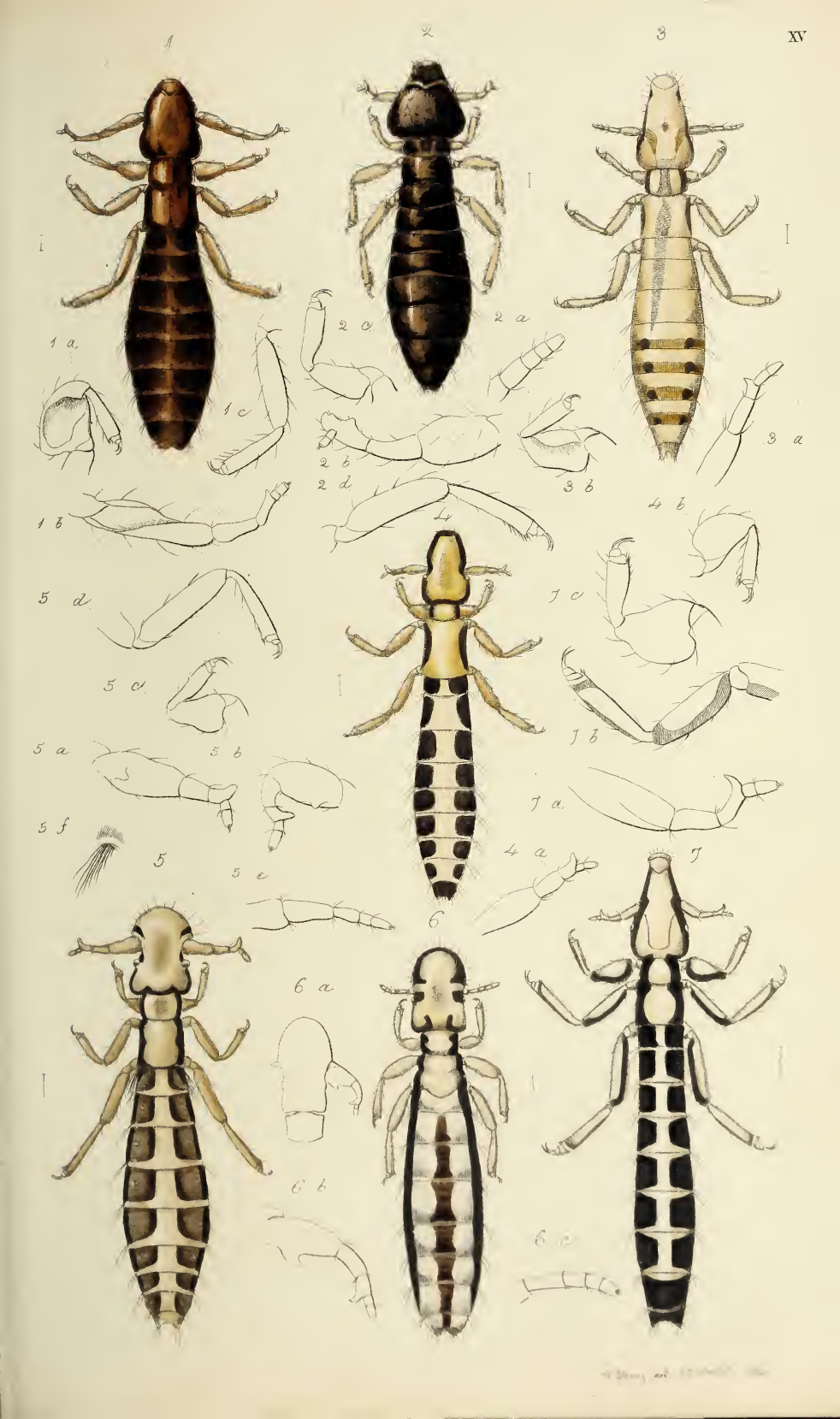
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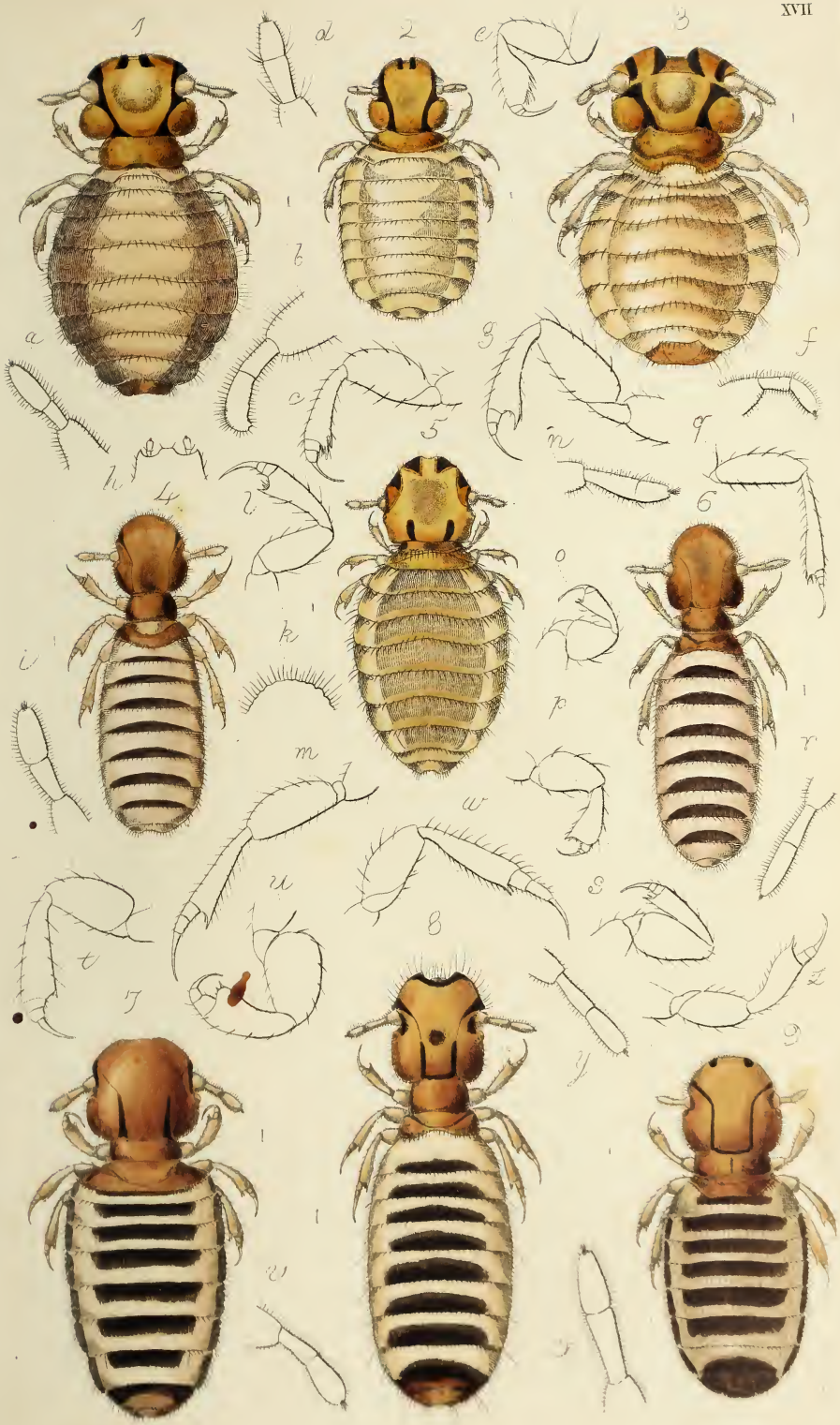
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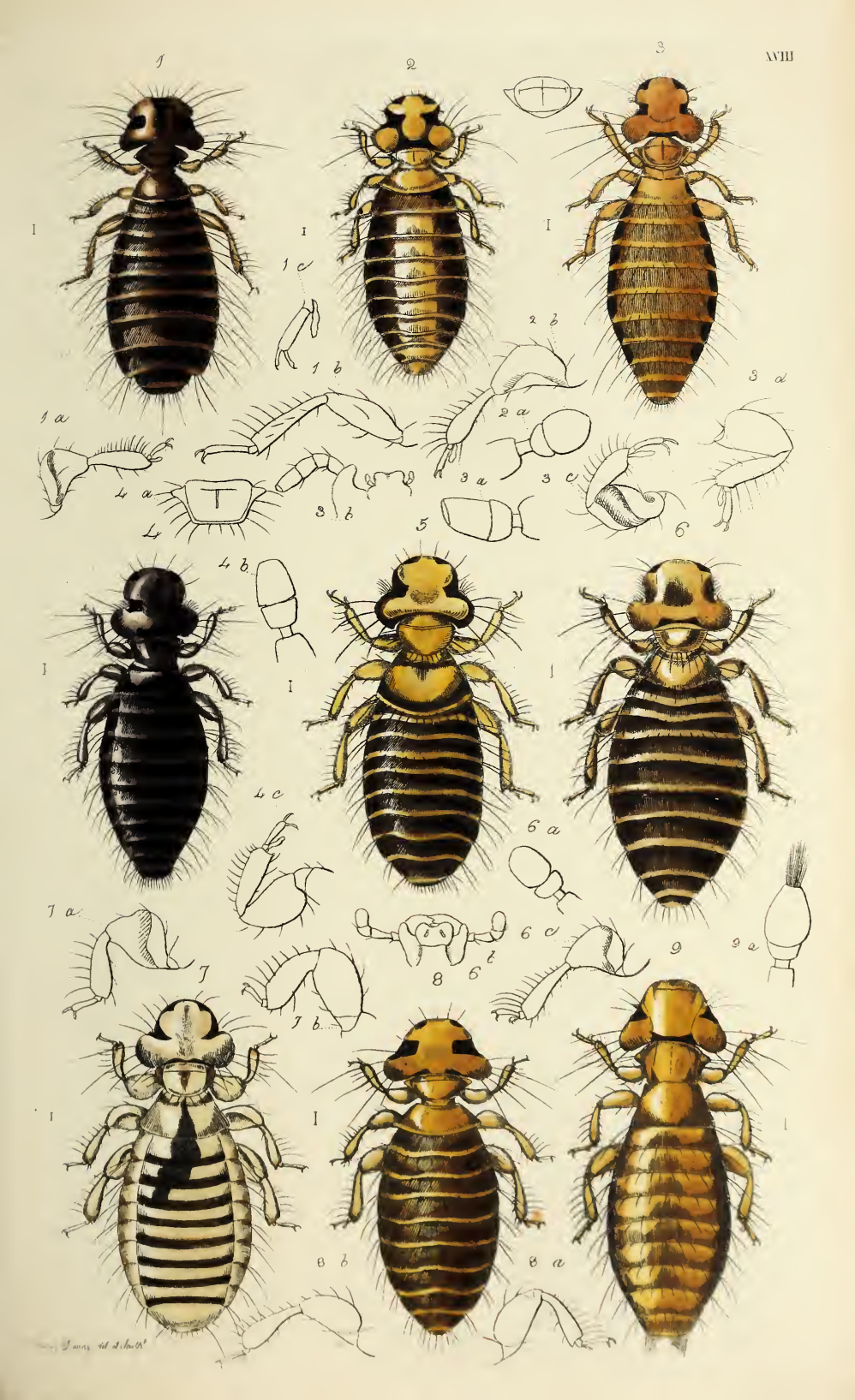
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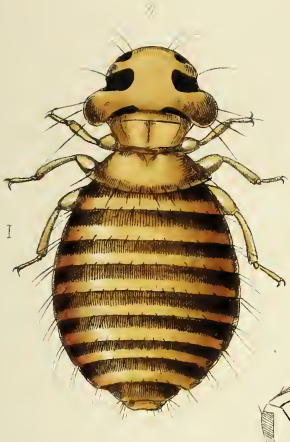

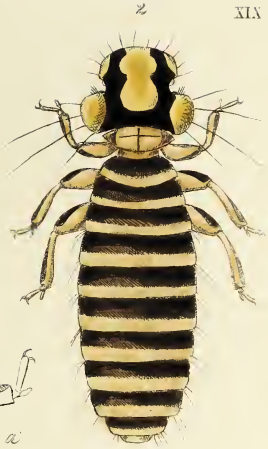

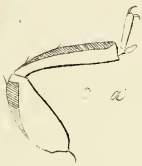

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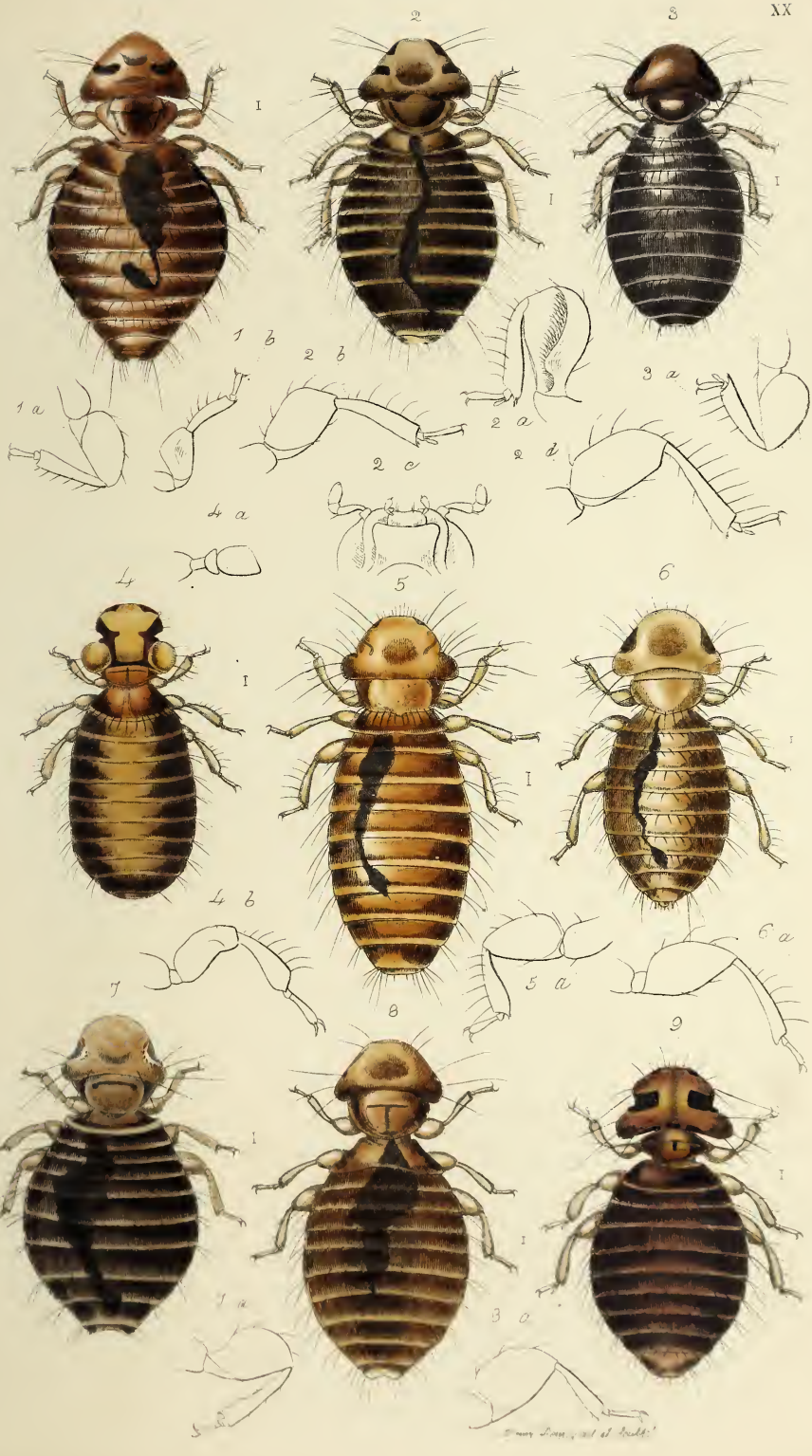
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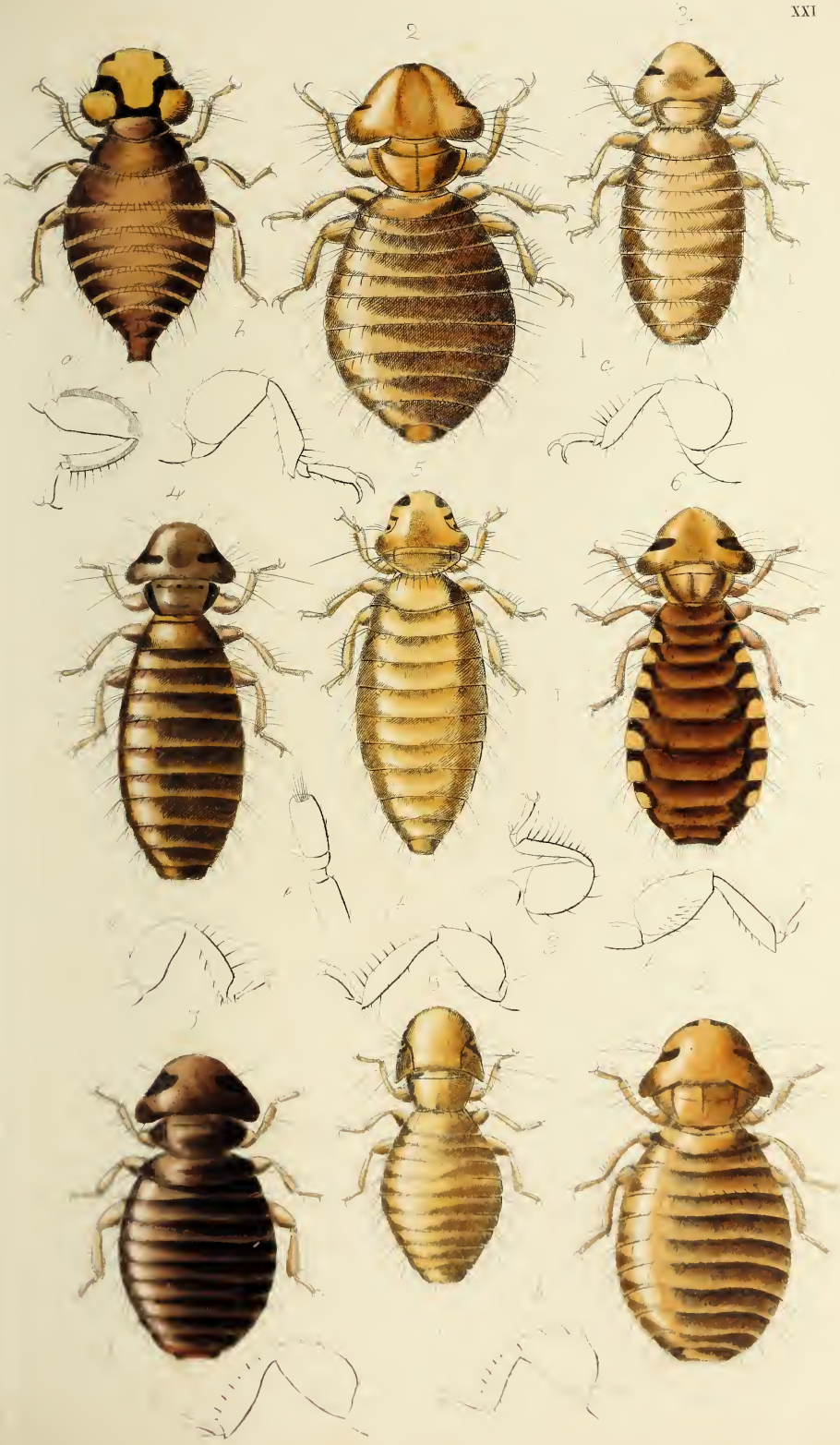

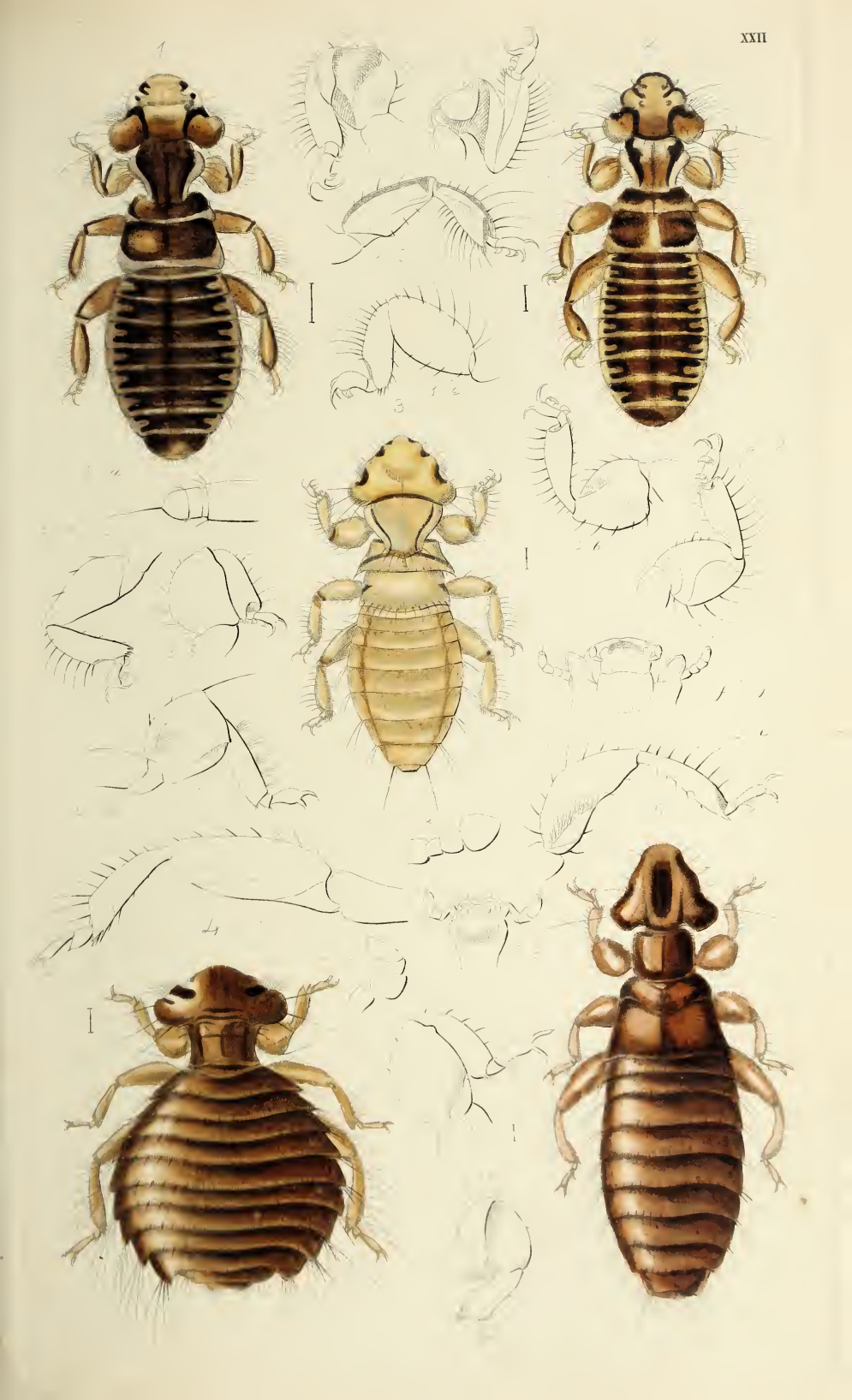

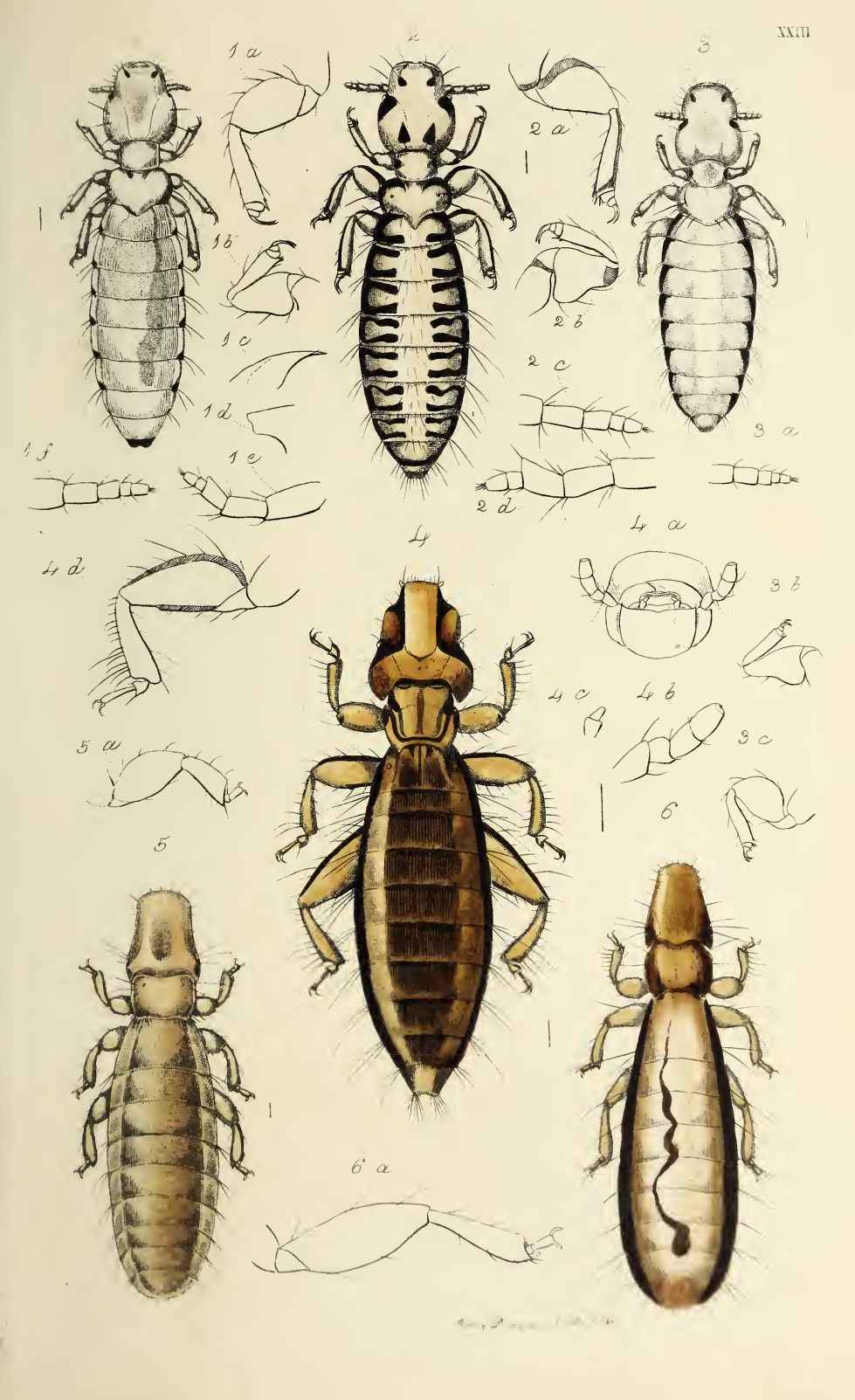
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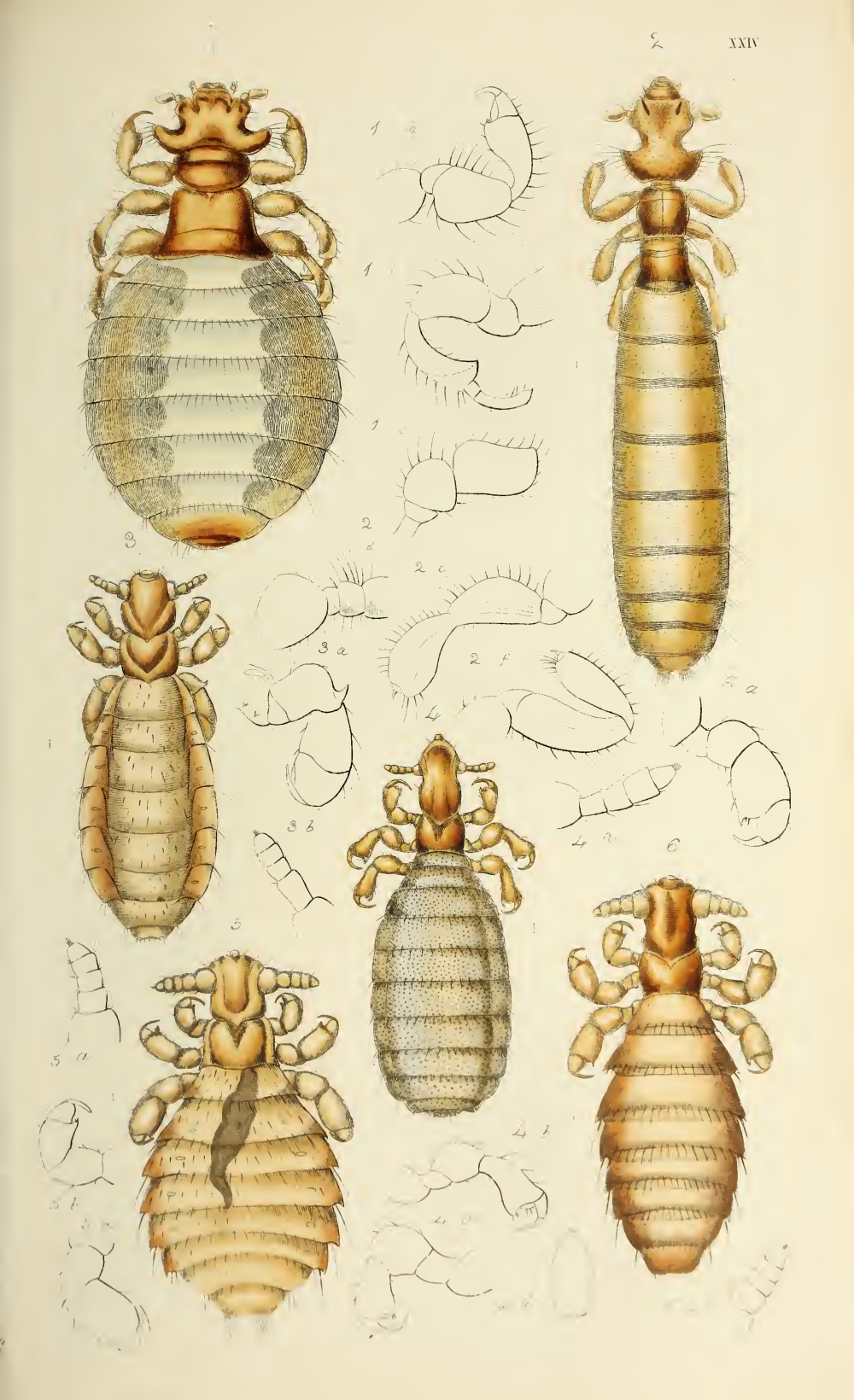

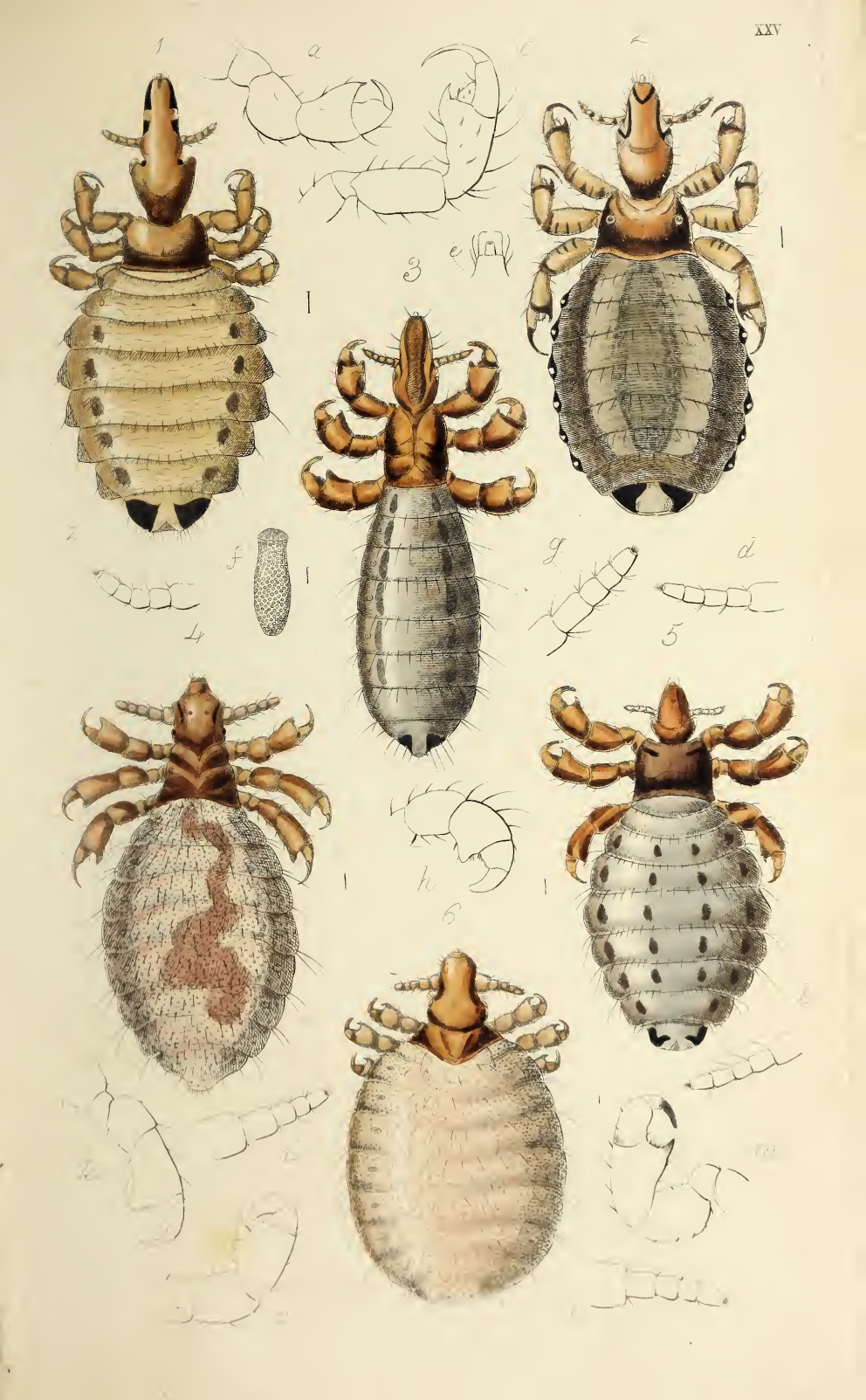
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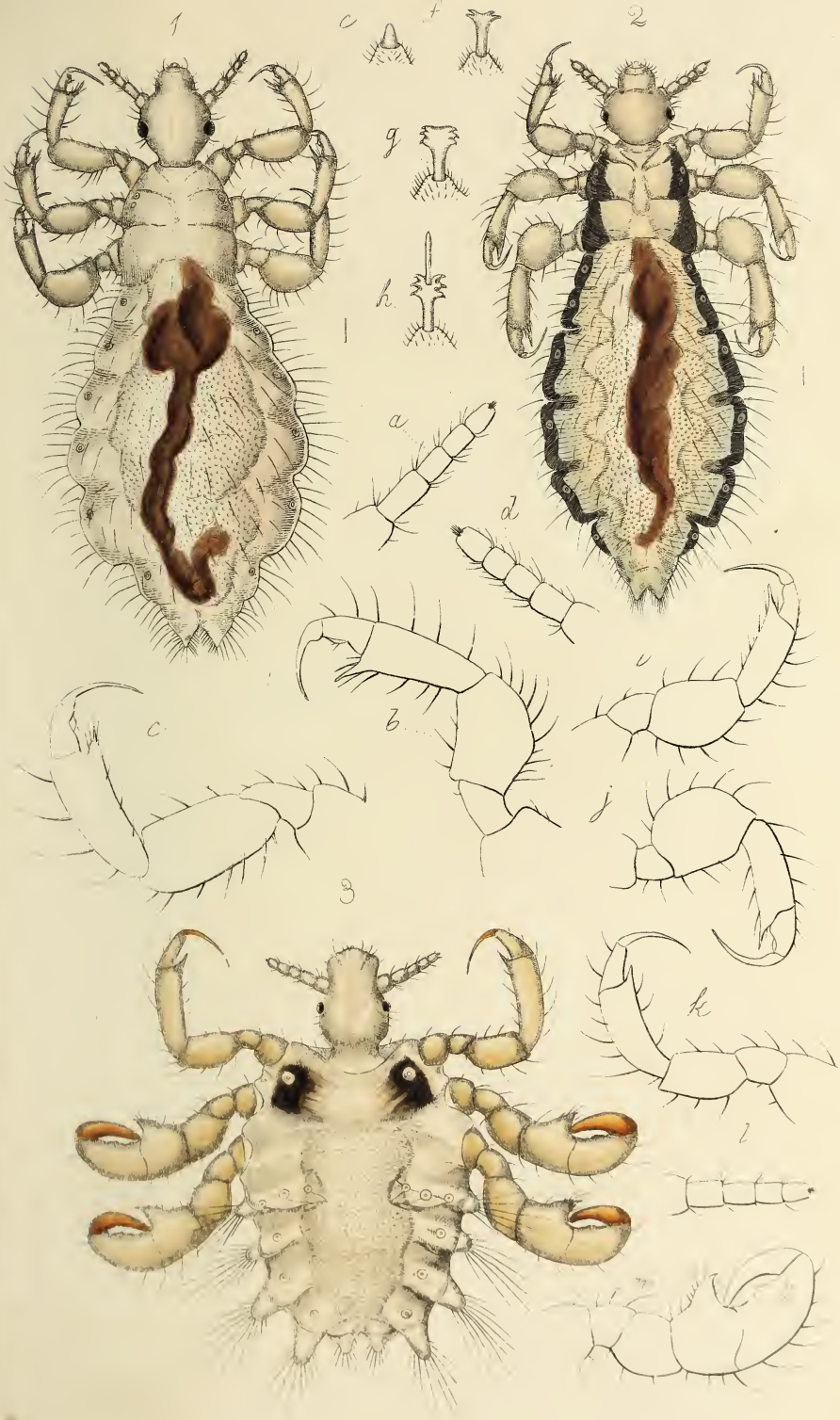
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